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OCTOBER, 1919

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MINNESOTA MEDICINE

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VOL. II OCTOBER, 1919 No. 10

ORIGINAL ARTICLES

MEDICAL EDUCATION AND THE WAR*

By M. G. SEELIG, M.D., Col. M. R. C. U. S. ARMY
Professor of Surgery, St. Louis University, School of Medcine

I have selected as a topic, Medical Education and the War, because all of us are interested in the problems of medical education, and because, now, of all times, is the most appropriate for an inquiry into the lessons of advantage, that we may draw. Never before in the world's history was medicine called upon so peremptorily to perform, and never before has her performance been more concretely measurable.

In order that we may be perfectly clear at the outset, and start off on the common ground of understanding each other, let me say that I believe that American Medicine—and I speak of American Medicine, not in the chauvinistic sense, but only because it is American medical education that concerns us this evening—that American Medicine met the call in such fashion as to leave room in the mind for only two emotions, one of pride of accomplishment, and the other of studied effort to assure even greater performance if future need ever arises.

Lest this studied effort be planless and prolix, let us consider the relationship between war and medical education a dual one. In the first place, the influence of medical education, as it stood in 1917, on the conduct of the war; and in the second place, the possible influences of the war on medical education of the immediate future.

With the American participation in the war, there arose out of the night, as it were, the need of a medical personal over one hundred times larger than that of the regular army medical corps. This numerical expression in itself means nothing, for it was not merely 40,000 medical *men* that were needed, but 40,000 medical *officers*, prepared to meet the medical problems of warfare, to acquaint themselves with war medical data already accumulating for two years in French and British hospitals; to mobilize their resources so as not to leave out of mind the needs of a civilian population, and finally, to safeguard the ultimate source of medical supply, by consideration for the medical student body. Surely, this was a problem of staggering proportions. The difficulty was heightened by the fact that the problem had to be worked out with material already on hand. It takes years to make a doctor. The doctors already made therefore, were the only ones to be thought of in 1917. It may interest you to know how the Surgeon General proceeded, confronted as he was with the necessity of using the ready made article rather than the hand tailored variety.

Time will not permit a full description of the working plan and activities of the Surgeon General's Office as a whole. 'Twill serve, however, to describe to you, the workings of one division of the office, and I shall select that division, concerning which I have the most intimate knowledge—the Division of Surgery. This division was in charge of a regular army officer under whom were coordinated several reserve officers. As consultants to the officer in charge, there was an advisory board of reservists, made up of the flower of American surgeons. By co-operation with the Council of National Defense, the American Medical Association and other similar agencies, the Division of Surgery was put in possession of the names of every qualified surgeon in the United States. By highly developed, concerted effort, the personnel officer of the Division of Surgery was able to record the professional qualifications and character of a large proportion of these men and to combine this data with ad-

*Read at Minneapolis, Minnesota, at the Clinic Week Meeting May 6-9, 1919 of the Hennepin County Medical Association.

ditional information regarding age, type and percentage of surgery practiced, institutional affiliations and similar significant details. All this information was codified. Based on it, the various surgical officers were graded in one of four classes, namely, as A, B, C, D, men. Measures were instituted to establish intensive short courses of surgical instruction at various civilian and camp centers, in order to improve the surgical status of lower grade men; and a simple system of reports was devised whereby the Division of Surgery was kept constantly informed of the professional and military qualifications of the men on its rolls. The concrete results of this program were admirable. Far more admirable than any one had the right to hope, in the face of the anxious, fitful spirit of haste that literally filled the air of those parlous days. It was a human program and was characterized therefore, by the frailties of human effort, plus the added elements of feverish activity and the necessary limitations imposed by purely military exigencies.

Men of grade A usually measured up to capacity. When they did not, it was usually due to other causes than professional inability. Men of the lower classifications grouped themselves into competents, indifferents or mediocres and incompetents. It is not fair to refer competency or incompetency totally to educational facilities, but other things being equal it is logical to assume that better medical education assures greater professional capacity. This much is certain—achievements were in large measure referable to the professional capacity of the better men; failures were in equally large measure due to lack of professional qualifications, and this lack in its turn, was referable in many instances to faulty fundamental medical training.

Brigadier General Munson, in an address before the Council of Medical Education of the American Medical Association attempts to correlate the weak elements in the Medical Reserve Corps Organization with the broader question of Medical Education. His inquiry is timely and even tempered. As published, the address, although according generous praise to the Reserve Corps, may be said to fail tactically in that it emphasizes reserve corps delinquencies in such fashion as to permit the reader implicity to draw on unfavorable mental contrast between this corps and the corps of regulars. Yet withal General Munson's statement is so dispassionate, and so judicial in tone that it does not seem to lend itself as a target, for the type of polemic that has been aimed at it. Sharp analysis will only reveal as the substance of General Munson's beliefs, the fact that the American medical profession was an undisguised blessing to the army medical corps, that the ranking men of prominence in civil medicine were, in many instances, mainstays, professionally speaking of the medical service; that from these men down, medical officers could be graded to the ulimate role of total unfitness; that medical educators might draw a moral from this, and finally, that an improvement in educational methods might be hoped for as a factor in raising the index of professional efficiency. Neither more nor less than this could be said in peace times regarding medical education and the medical profession, and exactly as much may be said at all times regarding educational methods and graduates in any other profession than medicines.

My own personal contact with medical activities in the United States military hospitals, led me to reach conclusions not varying materially from those reached by General Munson. Possibly, and if so, quite naturally, I have taken more pride in what I construed as the average high level of medical accomplishment and medical zeal, but I was ever mindful of the low grade of professional qualification that characterized a by no means negligible proportion of the medical reserve corps personnel. As I view the matter, faulty methods of education should not alone be made responsible for every discoverable flaw in the medical corps It is one of the prominent factors, but only one. Viewing the situation in the broadest possible perspective, we may say that ineffectiveness is referable to any or all of three causes—in the first place, and by all odds the most important, a faulty medical education, in the second place, a failure to progress and improve opportunity, and in the third place, a military non-adaptability. Regarding the faulty, inadequate or actually vicious methods of education, no comment is necessary. Failure on the part of men to progress and improve opportunities after graduation and unwillingness to keep step with the march of medical progress is an elusive factor, best visualized in mass, un-

der conditions such as the world's war developed. There is no standing still or marking time in medicine. Laurels are in no more certain way bedraggled than by sitting on them, and beyond all question of doubt, a goodly number of the medical reserve corps who had earned laurels at graduation, were sitting on them when the flag and trumpet called in April 1917. Finally, military non-adaptability comes in for a share as causing cause. In more ways than one, the regular army authorities, both the Regular Medical Corps and General Staff, failed to cultivate a spirit of military adaptability in life long civilians, and in equally many ways, did they actually do much to intensify an existing nonmilitary turn of mind. This is neither the time nor place to discuss what often amounted to military obtuseness, but let us not fail to consider it in our reckoning.

All in all then, the status of medical education at the outbreak of the war, was such that the profession of America was equipped to step into a breech suddenly opened, shoulder, unprepared, a huge burden, and carry on in a fashion second to no other branch or arm of the military service. More than this, the Medical Reserve Corps was the only branch of the service, untutored though it was in the essential arts of war, that by the very nature of things, was ready for and actually in service with our allies long before our arsenals had guns off the lathes, or our Quartermaster had wool off the looms.

Weaknesses there were, of course, and we have seen that these may be referred to three basic causes. In many instances, a poor, fundamental medical education, in equally many if not more instances, a poor or totally absent post graduate advance, and thirdly, the baneful influence of military martinetey. This third factor, we have agreed to pass over. What defects may have existed in the fundamental methods of medical education concern and influence the entire medical brotherhood; it is an all inclusive factor. The failure to improve ones medical opportunities after graduation on the other hand, influences directly only those who constitute the slothful, laggard class; less directly, the evil influence concerns medical institutions and that portion of the public served by unprogressive doctors. Among the institutions concerned, is primarily the medical corps of the regular army. The striking spirit of generosity with which the Surgeons General acknowledged their dependence upon the medical reservists, is an expression of the always manly character of the army, but it does not furnish cause for the army's failure to provide its medical personnel with clinical opportunities in times of peace. No other agency is in a better position than the government to do this very thing, and yet, so notably did the army neglect this patent duty, that if one may credit a fairly common expression of opinion, there were only a few especially competent clinical surgeons in the entire regular medical corps, when war was declared. All of us, I take it, have a proper and fitting sense of appreciation of the importance of administrative duties. But none of us, I am quite sure, would consent to the elision of the component word, medical, from the phrase—medical administration. This much is certain that if the artillery branch of the service furnished as little actual contact with the practical side of ballistics to its personnel, as the medical branch furnished practical clinical opportunity to its officers, Senator Chamberlain would have found much desirable tinder for his flint.

I think we may reasonably expect that one of the lessons of the war which will be taken to heart early, is that one pertaining to the medical education of the regular corps personnel. I think we may more than hope this, I think we may even expect that Congress will have the vision to support the Surgeon General liberally, in the execution of plans already directed towards this end. I think we may with more than blind hope, look forward to the establishment of a type of post graduate medical school at Washington, built around Walter Reed Hospital as a clinical center, and flanked by institutions for the development of all the cognate medical studies. Such a plan will serve well in the development of the medical corps of an army of 500,000, if such an army be created, and who of us here dare predict how potent a factor it would constitute in the medical fabric of the nation?

We may say therefore, with a fair degree of assurance, that insofar as medical education touches the heart and soul of the army itself, the war will in all likelihood serve as a starting point for a new movement, a movement toward better education and medical uplift—a move-

ment, that we shall be able to classify among the many other hoped for imponderable blessings that will in part, constitute solace for unforgetable tragedies.

But what will be the influence of the war in correcting those defects of a general medical education—education in the fundamental and clinical undergraduate medical studies? Here, I believe we may not so readily beguile ourselves with unrestrained hope. President Lowell of Harvard has said that of all sciences, education is the last to progress. I fear it will take more than a world's war to introduce a spurt that will be manifest forthwith. Indeed there are signs ominously significant, of a retrogression. The salaries of educators always small, have not appreciably advanced even in the face of unprecedent advances in the cost of the ordinary necessities of life. The fundamental branches of medicine have been well taught, as a general rule, in the better American schools. In my own mind, it is a serious problem, whether the teaching career now offers sufficient charm to attract men in the face of what amounts, in many instances, to necessitous material sacrifice. Within the past month, one of the leading anatomists of this country, director of the department of anatomy of one of our leading universities, confided to me that he dared not burden his conscience with the responsibility of either stimulating or urging young men to take up anatomical teaching and research, as a career. If some of the prophets be true prophets—and praise be that they may be—and if therefore, the one great outflow from this war will be the ushering in of an era of humanism, is it too much to hope that the Universities will direct a small portion of their vast energies toward furnishing teachers a comfortable living wage?

All this of course, does not touch the great problem of clinical teaching. Clinical teachers, almost without exception, earn their living by practicing, and they teach as an avocation. I may say in passing, that for fifteen years, I have been teaching one or another branch of clinical surgery and I have been teaching all this while as an avocation. During all this while, I have never been a teacher in the sense that I might have been, had I been free of the incubus of practice. This is an ill selected opportunity to debate the necessity for full time clinical teachers, but it is an appropriate place to say that we must content ourselves to admit that if the professors of surgery and medicine, furnished with a liberally filled quota of surgical wards, may in addition, gather shekels from and divert his attention to neighboring, outlying and far distant private rooms, then, by all processes of normal ratiocination, the professors of physiology, anatomy and pathology may do likewise. Indeed they have the better right. They have more time to practice. As teachers, they must needs command only their own fields, whereas the clinician must command his own field while constantly keeping abreast of and furbishing up on fundamental advances. According to by own personal analysis, many of the weak spots in the army service, pointed out by General Munson, are directly referable to the fact that clinical teaching as a career, is practically nonexistent. As long as it is not existent, the medical school output is certain to mirror that fact. Here and there may be found the superman, who can adequately direct a department of clinical medicine or surgery and engage in private practice. He is a marvel to me. So often have I been too dog tired to prepare properly for, or to hold a planned clinic or lecture, that the pure question of what the efficiency expert calls industrial fatigue is, for me, an indisputable answer to him who would with a wave of the hand, argue the full time clinical teacher out of court. I believe in a healthfully large part of the Bible, and in nothing do I believe more fully than this: "The wisdom of a learned man cometh by opportunity of leisure; and he that hath little business shall become wise." Becoming wise is the first step in imparting wisdom to others.

What I hope to see evolve from the war is an appreciation by us—the clinicians of the country,—of the fact that we must delegate clinical teachings to those willing and equipped to undertake it as a career. Place the responsibility of general planning and direction on their shoulders and then contribute what aid we may in proportion both to our time and qualifications. And if as a result of the war, this comes to pass in addition to the other consummations already devoutly wished for, surely, will we be able to say that war, the hateful breeder of evils, may also bring benefits in her train.

RECURRING INGUINAL HERNIA*

J. M. MASSON,
Mayo Clinic
Rochester, Minn.

No surgical procedure is more uniformly satisfactory than that of the operation for the radical cure of inguinal hernia. This is undoubtedly due to the fact that at least nine of ten cases are of the indirect type and hence favorable for surgery†. Probably about 75 per cent of all indirect inguinal hernias are the result of a persistent congenial sac without any other congenital abnormality or atrophy in the regional tissues.

It is unfortunate that in most published statistics the distinction is not more clearly drawn between the various types of inguinal hernia, since the one type, and fortunately the most common one, is readily cured by almost any form of operation providing that an obstruction is placed in the neck of the sac at the level of the internal ring. This can be accomplished by ligation, compression by the tight closure of the canal or plugging from the inside as is occasionally attempted by pseudo-surgeons who inject paraffin. On the other hand, the direct inguinal hernias, the large scrotal hernias of long standing of whatever type, the so-called sliding hernias, and the recurrent hernias are satisfactorily treated by some form of plastic closure of the inguinal canal as well.

I wish to emphasize the vast difference in the curability by operation of the various types of inguinal hernia and to urge the advisability of using some form of transplantation of the cord or a plastic closure of the floor of the inguinal canal in at least all the difficult cases. Personally, I believe that a technic which is preferable in difficult cases is also preferable in simple cases. The additional few minutes required and the satisfactory results obtained in every respect, make the more radical operation advisable in practically all cases. Our own statistics 7,016 cases (this includes 1,652 cases reported by Dr. Judd in 1907) show a little less than 1 per cent of recurrence following the cord transplantation, and a little more than 1 per cent following the anatomic operation. In Coley's statistics the difference is even more marked, with 0.6 per cent of recurrence following the Bassini operation and 4 per cent following the Ferguson operation.

Five thousand three hundred sixty-four inguinal hernias have been operated on in the Mayo Clinic from 1907 to the first of this year (1918). Two thousand two hundred thirty-four were right inguinal, hernias, 1,430 left inguinal, and 850 bilateral inguinal. Three hundred thirty of the operations were done for recurrence; 260 for recurrence following operation done elsewhere, 70 following operations in the clinic. This included twenty-nine bilateral recurrences, which were counted as 58 operations. Two hundred fifty-eight of the 330 patients with recurrence had had one previous operation, 44

*Presented before the Minnesota State Medical Association, Aug. 30, 1918, Duluth, Minn.

†Davis in a splendid report of the end results in 1500 cases operated on in the Massachusetts' General Hospital reports 94.2 per cent indirect and 5.8 per cent direct.

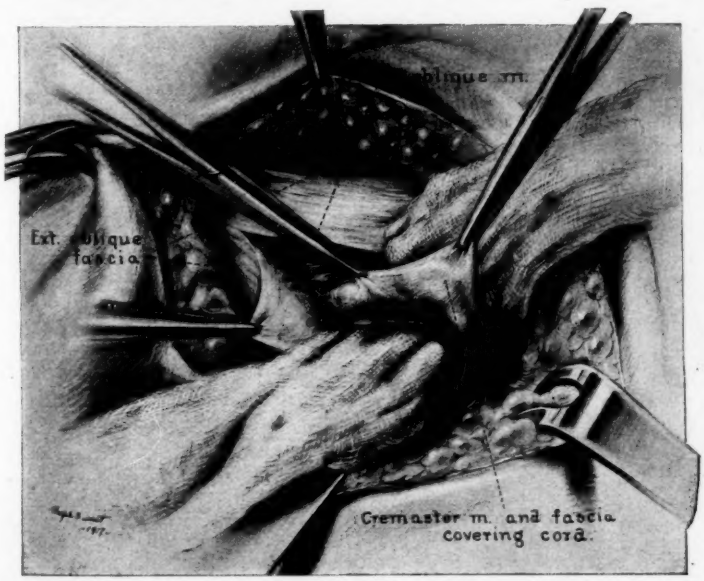


Fig 1. Spermatic cord freed throughout the entire length of the inguinal canal. Coverings of cord held with forceps.

had had two, 20 had had three, and 8 had had four. These figures show distinctly that the more frequent the previous operations the greater the difficulty in securing a radical cure, as the number of cases in which two or three operations are required must be very small. In many instances it is difficult to determine from the history the type of operation that has been done and where the recurrence has taken place, but experience with these cases seems to demonstrate that by far the greater number follow the so-called anatomic or Ferguson type of operation, especially when it has been used in the direct hernia.

Inguinal hernias are believed by the laity, and by many members of the medical profession, to be all of the same type and readily curable if properly operated on. This is an unfortunate impression. The patient should be prepared for the possibility of a recurrence, or on the other hand, he should be told that the hernia is a simple one and that he has a little better than ninety-nine chances out of a hundred for a perfect result if a careful pre-operative examination is made. The hernias that are particularly difficult to cure are those, either direct or indirect, that are associated with a poorly developed internal oblique muscle, and this type can always be determined by a digital examination through the external abdominal ring. The normally developed internal oblique and conjoned tendon (when it is present) can readily be felt and the distance between these structures and Poupart's ligament accurately estimated. In the other cases, the reverse is true, and in the worst cases no resistance is encountered until the edge of the rectus is reached. Erdman (1917) in a review of 148 cases found that there were but two recurrences in 102 indirect inguinal hernias, and no less than 7 recurrences in 46 of the direct type.

Another hernia difficult to cure and yet which belongs to the indirect type, is the one so often found in old men who have a hernia of long standing with a large mass of omentum or omentum and bowel descending into the scrotum, and who have probably worn a truss for many years with complete satisfaction until the last few months. In these cases the deep epigastric vessels are drawn down almost to the crest of the pubes and the internal abdominal ring is directly behind the external abdominal ring, with marked enlargement of both rings, and the surrounding tissue is of a very poor quality for plastic work.

The direct-indirect, saddle bag, bilocular or pantaloon hernias, as they are variously called, present no difficulties that are not common to all direct hernias, except that it is also necessary to remove the part of the sac that accom-

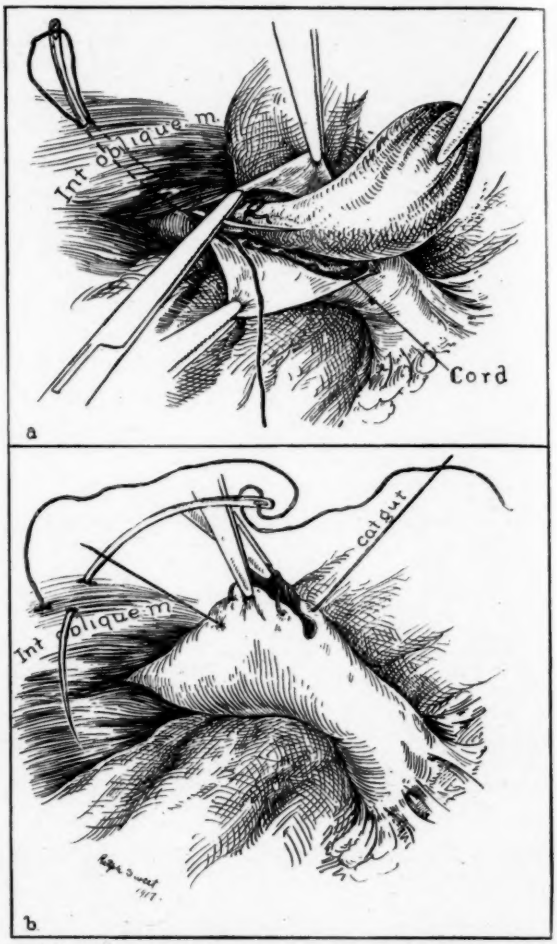


Fig. 2. (a). Hernial sac isolated. Neck ligated and suture carried through the internal oblique above the internal ring.
(b). Sac excised. Closure of cremaster preliminary to fixing the neck of the sac well above internal ring.

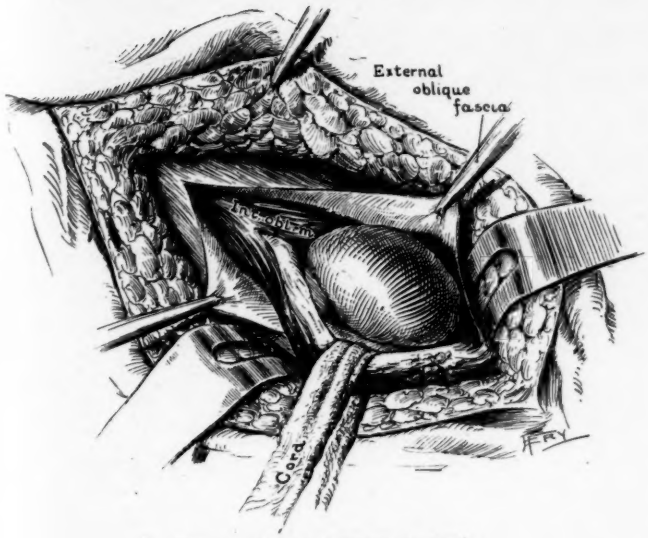


Fig. 3. Direct inguinal hernia.

panies the structures of the cord, as well as to treat that portion which comes through the transversalis fascia below the deep epigastric vessels.

The operation for sliding hernia is always difficult on account of a large internal ring, and after the removal of as much of the sac as possible, the bowel still protrudes and when returned into the abdomen tends to make a direct and constant pressure on the line of closure of the inguinal canal.

Operations on recurrent ruptures invariably present added difficulties, as a rule increasing with the number of previous operations. It is not at all uncommon to find a direct hernia at the second operation when the surgical findings of the first operation indicate that an indirect sac was removed at that time. These hernias are always associated with a poorly developed internal oblique muscle and in most cases are the result of injury to the nerve supply of the lower fibers of the muscle.

Age Incidence

	Cases	Per Cent
Under 20 years...	8	4.4
20 to 30 years....	69	20
30 to 40 years....	80	24.1
40 to 50 years....	88	26.3
50 to 60 years....	59	18
60 to 70 years....	21	6.4
Over 70 years....	9	2.8

In the 330 cases of recurrence only 8 patients were under 20 years of age and all gave a history of recurrence having taken place immediately following the first operation. None of these 8 paitents had been operated on by us and, therefore, we have no record as to the type of the hernia at the time of the first operation. It is an interesting fact that a great many patients are operated on during this period. It was found that 88 cases or a little more than 25 per cent of the total number of

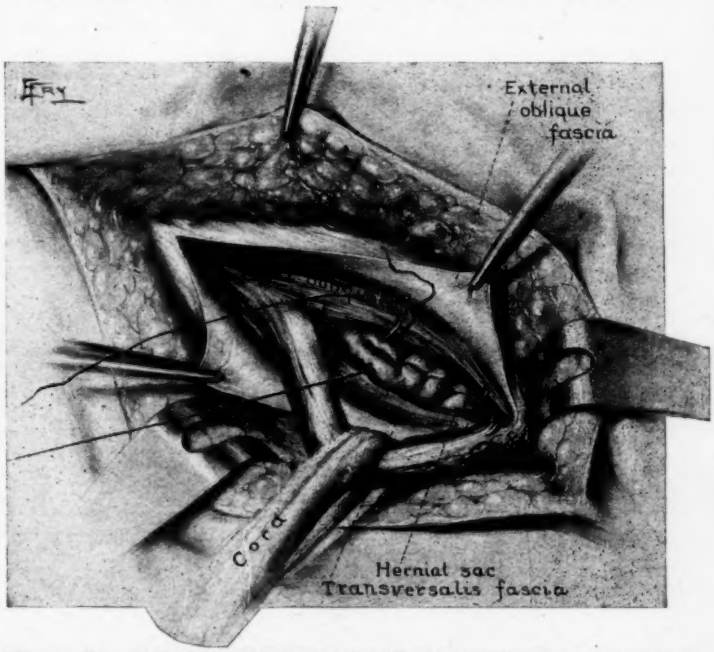


Fig. 4. Sac of direct hernia inverted without removing any of it and the base with adherent preperitoneal fat sutured.

recurrences, were in patients of more than 50 years, and another 25 per cent of the total number occurred in the fourth decade; that is, more than half of all recurrences were in patients over 40 years, and practically all published statistics show that only about one-fifth of all hernia operations are on patients of this age or over. This clearly shows that any type of operation is satisfactory on children and young adults, but for older persons every precaution should be taken and the strongest possible closure made. John B. Murphy reported 1 per cent recurrences in 74 patients below 20 years of age, 4 per cent between 30 and 60 years, and 9 per cent were more than 60. The chief reason for the marked difference between the curability of hernias in the young and in patients past middle age is no doubt owing to the fact that the tissues heal more readily in the former and the inguinal rings are little, if any, dilated and, in addition, direct hernias are rare in persons below the age of 20 years.

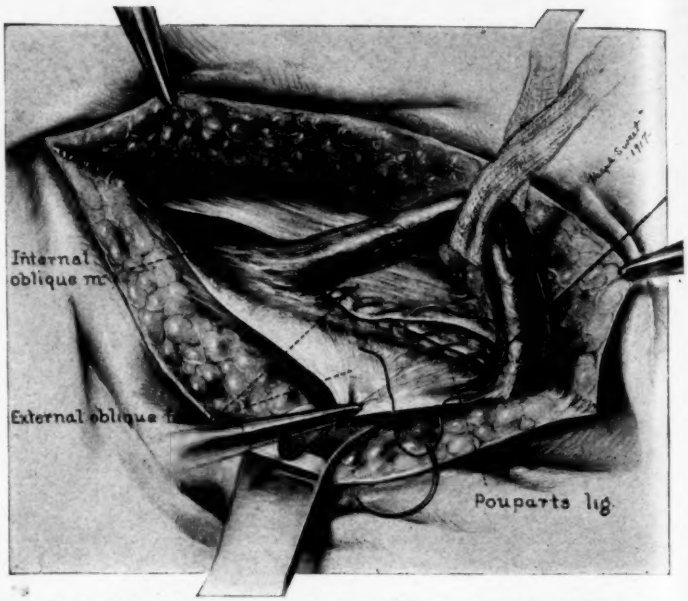


Fig. 5 Conjoined tendon and internal oblique sutured to Poupart's ligament with continuous chromic catgut.

In 1908 Coley reported upwards of 2,200 operations for indirect inguinal hernia in children. In our series were two children with direct hernias, but they had both had previous operations, and in all probability the weakness in the inguinal canal resulted from injury to the nerve supply of the lower fibers of the internal oblique muscle.

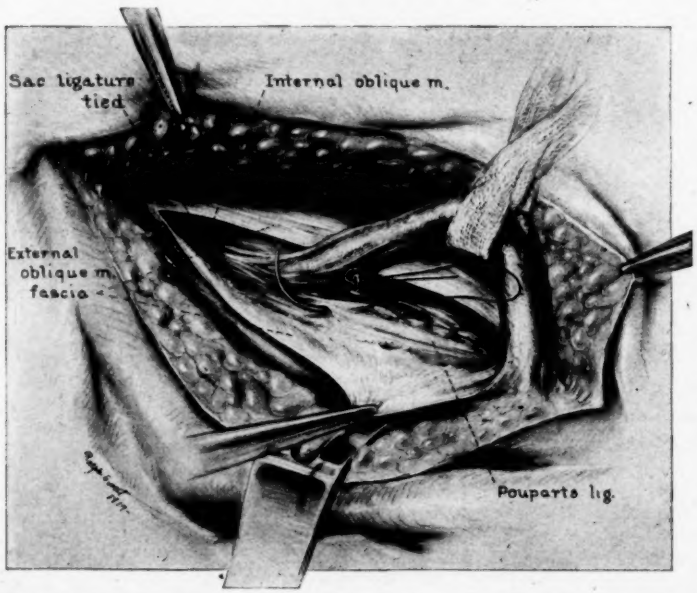


Fig. 6. Upper layer of external oblique sutured to Poupart's ligament.

A great many indirect hernias in patients more than 40 years are also difficult to cure because they have existed for a long time; the rings gradually dilate to many times their normal size, with more or less atrophy in the abdominal wall. Often such patients lead a sedentary life, hence, there is an unusual amount of fat in the muscle. Again, a great many have worn trusses, and a pressure-atrophy of the regional muscles results.

In all plastic surgery, the important feature is to get apposition without tension and the

strength of the suture material is not of much moment, provided it will stand the ordinary strain that a wound is subjected to during a vomiting or sneezing spell. No. 2 catgut meets this requirement. Besides being strong enough to begin with, it must also remain strong enough until healing is well established, which means from ten to fourteen days. For this reason twenty-day chromic catgut is preferable. The use of heavier suture material does not, in my opinion, add anything to the security of the operation and frequently predisposes to trouble and recurrence. I have had no experience with filigree or silver wires except in taking them out. I do not believe the use of this material necessary or advisable in any case.

Technic of Operation

The operation I have used almost exclusively for the past five years is a slight modification of the Andrews operation, which in turn is a combination of the Halsted and Bassini principles. The only exceptions to this technic are: (1) to follow the Ferguson technic in all hernias associated with undescended testes and in some instances in infants, (2) to utilize the rectus muscle, according to Bloodgood, in all cases in which the internal oblique is not sufficiently strong, (3) in a very few cases to follow the Halsted technic, and (4) in extra difficult cases, in old men, occasionally to cut all the structures of the cord at the internal ring, close the canal much the same as in the treatment of a ventral hernia, and to perform an orchidectomy. In one case in which the patient had been operated on twice before coming to the clinic, and once by myself, I did not find a definite structure which could be called Poupart's ligament. I removed the cord and testicle and turned up a flap of fascia lata from the thigh, imbricating it on the top of the external oblique with, so far as I know up to the present time (six months), a good result.

For unilateral ruptures the usual oblique incision is made, and in most bilateral cases, the transverse incision, (advised by Judd in 1913) is very satisfactory. The external oblique aponeurosis is incised about one-fourth inch internal to the inner pillar of the external ring. This is then cut across, which gives a good exposure of the contents of the inguinal canal and also leaves sufficient aponeurosis in the lower flap to use later in covering the cord. Care is taken not to injure the ileo-inguinal or ileo-hypogastric nerves, and it is not necessary nor advisable to separate the genital branch of the former from the cremaster, with which it is closely associated. The cremasteric fascia with its enclosed cord structures and hernial sac (if one is present) is first freed from Poupart's ligament and the floor of the inguinal canal is then freed from the edge of the internal oblique and conjoined tendon (Fig. 1).

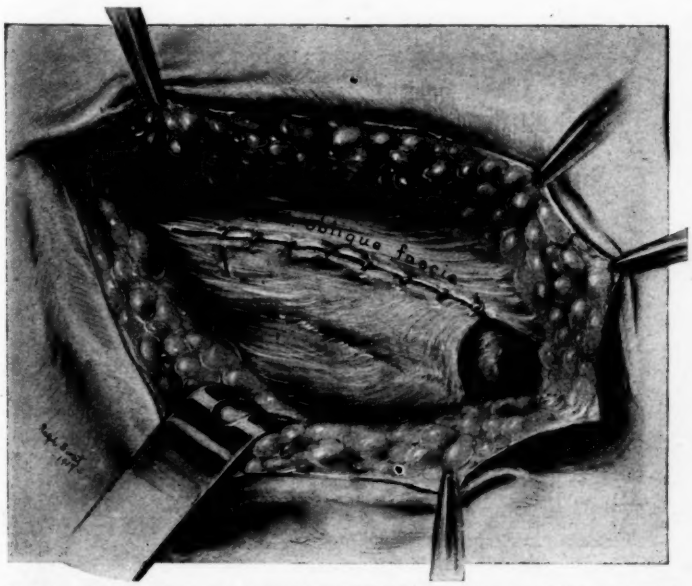


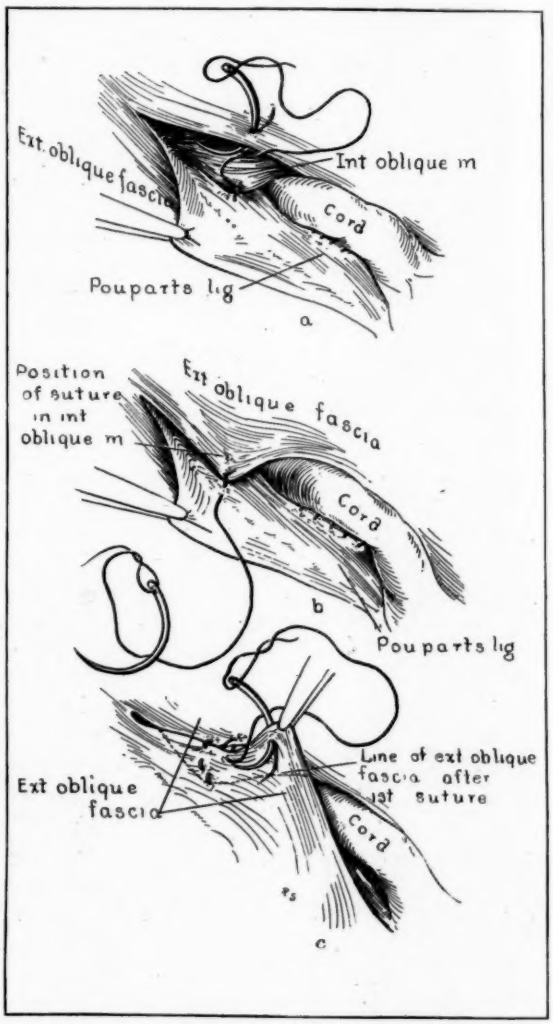
Fig. 7. Cord structures covered with the lower layer of the external oblique aponeurosis.

In indirect hernias the sac may always be found at the level of the internal ring in the interval between the vas, which is to the inner and posterior side, and the vessels which are anterior and external. An incision about one inch in length is made through this covering of the cord at the point and the sac

is located and opened; it is generally an easy matter to reduce the contents and free the sac from the normal cord structures (Fig. 2). If firm adhesions are encountered, rather than to traumatise the cord structures or leave an extensive raw surface which would ooze considerably afterward, I prefer to cut the sac close to its neck, and if the cut end of the distal section is left open, it will not lead to future trouble. The proximal portion may then be treated in the ordinary manner. Any preperitoneal fat tags accompanying the cord structures through the internal ring should be ligated as high as possible and excised. It is important to handle the cord structures as little as possible, in order to avoid postoperative pain and swelling.

The neck of the sac is thoroughly freed from the edge of the cremaster and transversalis fascia and ligated at as high a point as possible; the stump is transfixed to prevent the slipping of the ligature, and the distal portion is cut off. The free end of the ligature used for tying the sac is then threaded onto a large hand needle and by this is carried through the transversalis and the internal oblique muscles as shown in Figure 2 at a point about one and one-fourth inches above the internal abdominal ring. By drawing the neck of the sac tightly up to this point and fixing it there by tying the catgut, the sac is prevented from causing pressure at the internal ring while healing is taking place. This procedure carries out the Kocher idea and is a much safer and simpler method. The opening in the cremaster is now closed and the cord is held out of the way by a piece of gauze while the canal is closed (Figs. 3 and 4). In the cases of direct hernia, unless the sac is large, it is not opened but simply turned in with its covering of preperitoneal fat and a few stitches placed in the base to prevent it from making pressure on the suture line during the process of healing. I have been more particular in this respect since having opened into the bladder in one such case. However, the accident was recognized at once and satisfactory closure was made, the wound healing without drainage.

The plactic closure of the inguinal canal is the most important step in the prevention of recurrences in direct hernias and in all the difficult cases of the indirect type (Fig. 5). The principle generally credited to Bassini of bringing the internal oblique and conjoined tendon down to Poupart's ligament behind the spermatic cord, would probably be sufficient in all cases in which these structures are well developed and the interval between them is not too great. However, additonal security is obtained by bringing the



&Fig. 8. Internal and external oblique sutured to Poupart's ligament above the level of the internal abdominal ring.

cut edges of the external oblique aponeurosis down to Poupart's ligament also, as first suggested by Halsted (Figs. 6 and 7). Additional strength is also obtained by the Andrews imbrication of the external oblique, which, in addition, makes a covering for the cord.

Marked atrophy of the internal oblique is often seen in recurrent cases or when patients have worn a truss for a long time. In such cases it is frequently advisable to utilize either the sheath of the rectus or the rectus muscle itself. I prefer the latter and by freely slitting up the sheath (as a rule about three inches) it is always possible to draw the muscle fibers down to Poupart's ligament without undue tension. In most cases of this type it is advisable to follow Bloodgood's suggestion of cutting the sheath of the rectus posterior to the attachment of the internal oblique, and in this way the use of that muscle in strengthening the closure at the internal ring is not interfered with.

The suture material is of the utmost importance and the use of heavy absorbable and nonabsorbable material is more frequently an added danger than a safeguard against recurrence. The mistake so often made, and frequently hard to guard against, is making the closure under too much tension, with the result that the sutures cut through or strangulate the tissues, and a recurrence results. Once healing is secure, nonabsorbable material remains as a foreign body in the wound and is a weakness rather than a strength.

The closure is started at the bottom of the canal, the first stitch going through the internal oblique (or conjoined tendon when present) close to its insertion into the crest of the pubis and Poupart's ligament near its insertion into the spine of the pubis. When this suture is tied, the structures almost approximate one another throughout the entire length of the inguinal canal, and no tension is required to complete the closure by whipping the internal oblique to Poupart's with about six stitches. A fairly tight closure should be made at the internal ring making sure that there is little danger of constriction of the cord at this point, especially when the natural coverings of the cord are preserved. Figure 6 shows the upper layer of the aponeurosis of the external oblique being drawn down to Poupart's and, as there is a little extra tension at the upper-outer end, an extra stitch may be inserted at this point by tying the free end of the ligature. The approximation of the external oblique to Poupart's is then completed with the continuous stuture, which is finished at the spine of the pubis and tied to the free end at that point.

As an occasional point of recurrence of the hernia is directly above the cord where it emerges through the internal ring I follow Coley's suggestion and put one stitch in the internal oblique and Poupart's at this point, being careful not to injure the ileo-inguinal or the ileo-hypogastric nerves, which lie on the surface of the muscle (Fig. B). Continuing with the same suture one or two stitches are generally placed in the external oblique above the cord, imbricating the lower part on top of the upper, continuing down and enclosing the spermatic cord structures between two layers of the external oblique aponeurosis, as shown in Figure 7.

Hemostasis is very important and after tying all visible bleeding vessels the space between the skin and the external oblique are obliterated as nearly as possible by closing the subcutaneous tissue with a continuous plain No. 1 catgut suture, and by making frequent catches into the surface of the external oblique.

It is not necessary to use tension stitches and I prefer to close the skin with continuous horsehair.

A light gauze dressing is applied and a suspensory bandage put on the scrotum. Most of the postoperative pain and swelling is due to oozing or unnecessary handling of the cord structures and testicle. I do not believe it is ever necessary to deliver the testicle from the scrotum unless the patient has a co-existing pathologic condition of that organ.

The majority of patients are allowed to get up on the eighth day, but in the worst cases, including all recurrent hernias, the patients are kept in bed about fourteen days. Light work is allowed in from six to eight weeks and heavy work in from three to six months.

In our 356 cases of recurrences in which the time of recurrence was recorded, 189 recurred in the first six months, 26 recurred between six and twelve months, 19 recurred between one and two years, and 22 recurred between two and eight years.

If a hernia recurs within six months, either the operation was not sufficient, or the patient over-exercised after operation. On the other hand, recurrences after twelve months are more apt to be due to the development of a new hernia as the result of stretching in scar tissue or atrophy in the muscles. One cause for this is, without doubt, the wearing of trusses following operation, and another cause is injury to the ileo-hypogastric nerve, with resulting atrophy in the internal oblique, which frequently occurs at the time of the first operation and, as Balfour has shown, may also be the result when on the right side, of a gridiron incision for appendicitis.

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DISCUSSION

DR. A. F. SCHMITT, Mankato: I have had the good fortune to become more or less familiar with the technic and the work of the writer of this paper, and I feel there is not anything I can say that would add any light to the presentation of this very interesting subject.

It is most gratifying to have so large a number of cases reported with such remarkable results. I wish to emphasize a few points. The treatment of these hernias, not only recurrent hernias but all hernias, is especially important because it is one of the fields in which the pseudo-surgeon or quack has been making bread and butter and really bringing disgrace to the medical profession. When patients with hernia come to us after they have been manipulated by these pseudo-surgeons it is doubly difficult for the best of surgeons to achieve the results that will be both a credit to the surgeon and a benefit to the patient.

The ligation of the sac high up is very imperative and is sometimes neglected. A surgeon gets in a hurry or is hampered with some other condition at the time of the operation, and a hurry up operation is done, hence, that part of ligation of the sac high up is neglected, and it may be potential of a recurrence.

Many of these cases at the age the doctor referred to come to us after haing worn trusses for a long time with pressure atrophy of the tissues, and that coupled with the age of the patient, in which the blood and nerve supply and healing process are somewhat diminished and delayed, is an additional potentiality for recurrence and requires all the more careful technique.

The point the writer made in getting proper approximation of the tissues of the external oblique over Poupart's ligament without undue tension is very valuable, indeed. I feel the cases where I have fallen down in this work have been those where the tension was too great or the ligature too heavy, not allowing absorption early enough, allowing the accumulation of serum, and the undue pressure causing separation and undoing the approximation which I should have obtained and maintained at the time of and after the operation. Splitting of the fascia of the external oblique and slipping the muscle over where the internal oblique is not sufficiently developed or is atrophied allows a sufficient bumper to cover the lower inguinal canal is important. This work can be done in a short time.

As a matter of habit, I make it a rule not to keep these patients in bed too long. It seems strange that we as physicians and surgeons get into these ruts; we follow established rules that the older professors told us about and we stick to them. The development of thrombosis is so common in these herniotomy cases where we keep patients in bed too long. It is very important to get them up as early as possible, and I was glad to hear the essayist say he gets his patients out in from eight to fourteen days. In large hernias which have been extra-abdominal for a long time, where there has been undue tension on the structures, and where the hernia has been removed from its natural habitat, or rather the intestinal coil has been removed from its natural habitat, I get good results from putting these patients to bed for a few days previous to the time of the operation, get the bowel back, and let it become accustomed to the natural place in the abdomen,

and after operation there is less tendency to pressure on the field of the operation.

I want to congratulate Dr. Masson on presenting this splendid paper to the Surgical Section.

DR. THOMAS E. WILLIAMS, Eau Claire, Wisconsin: We are naturally very grateful to Dr. Masson for his splendid review of this subject. He laid very little stress on the sutures used. Recently in Chicago, Dr. Willard Bartlett, of St. Louis, presented a paper on recurrent hernias and laid especial stress upon two things. Dr. Schmitt has mentioned one of them in particular, and that is the relief of tension on the sutures. Dr. Bartlett elaborated on this very thoroughly, and that is the preparation of the patient before hand.

I would like to ask Dr. Masson in his summary to give us a brief outline of the preparation of these patients with recurrent hernias, especially those advanced in years. He seems to think that is one of the most important things before operation; namely, to make easy approximation of the parts to be sutured, and then the careful application of the sutures not to get them too tense. Personally, I have been an advocate of silk ligatures, I have always used them. I got that method from Dr. Schwyzer of St. Paul, whom I greatly admire, and who reported to this association a year ago three hundred and seventy-six consecutive cases of hernia of the inguinal region without a recurrence so far as he could find out. Personally, I carried out in conjunction with Dr. Schwyzer a number of years ago some research work upon animals with the use of silk, and we proved conclusively to our satisfaction that fine silk, using it double, is absorbed as readily as chromic catgut, and the preparation of it is one of the most important features, that is double boiling the silk in one to five hundred bichloride of mercury.

I am sure it is a great pleasure to hear the statistics Dr. Masson has given us which are certainly encouraging.

DR. A. W. IDE, Brainerd: I would like to ask the essayist, if I may, if he pays any particular attention to the question of swelling in the repair of the external ring? It has seemed to me there is quite a tendency to have that pretty snug. Care should be taken to prevent constriction of the cord.

I was much interested in the statement that these patients are kept from doing heavy work from two to six months. I believe there is a great tendency to get these patients to work too early. I believe the idea of keeping them away from heavy work the first three to six months, depending upon the hernia and the nature of the work, is a very important factor.

DR. MASSON, (closing): I do not know that I have anything in particular to say other than to answer some of the points that were brought out in the discussion. I shall first speak of the suture material. Before going to the Mayo Clinic I had always used kangaroo tendon, and I believed the results depended a good deal on having suture material that would last twenty days or even longer. I am sure that in my earlier operations, when I used interrupted sutures, I tied them too tightly; not only drawing the internal oblique down to Poupart's ligament but frequently tying it so tight, that the suture cut into the muscle, which added a source of danger rather than protection.

As far as nonabsorable sutures are concerned, I have never used them to any great extent. I used silk and linen in my earlier work in difficult cases, and when good results followed I gave the suture material credit, but after an experience of five years in operating on a great many hernias that were more difficult to deal with surgically than those usually encountered in private practice, including a great many recurrent hernias, I do not use sutures stronger than No. 2 chromic gut. For children I use No. 1. If the wound is closed without undue tension and the sutures are not tied too tightly, they will not cut through or break, and if there is no infection, nature will look out for the rest. The tissues will have a chance to heal in the position you put them.

As regards the transverse incision, I might say that one advantage in a double hernia is that we have one transverse rather than two oblique incisions in which the circulation is cut off in the lower part of the central flap. As a result serum collects in the lower end of the wound and as it is hard to keep th lower angles of the wounds covered with dressing, infection is prone to follow. With the incision made higher the dressing can be kept in place and the danger of infection avoided. The only disadvantage of the transverse incision is in stout persons in whom it is hard to get exposure.

Previous to my surgical work in Rochester, I kept patients in bed from two to three weeks to give the tissues a chance to heal. I received a shock in this regard the first day I was in the clinic. Young adults, with indirect inguinal hernias, are made to get out of bed on the eighth day. Older people with bad hernias are kept in bed longer, and when allowed to get up on the tenth or fourteenth day they are allowed to move around a little but not to do any work. I am satisfied from my own experience as a patient that sitting up or walking slowly and carefully does not subject the wound to as much strain as that of moving in bed or in using the bedpan.

As to the preparation of the patient before operation, that is an important feature. I used to keep fleshy patients in bed for a long time trying to reduce their weight by rest and purgatives. In the bad cases of large hernias it is very important that patients shall be kept in bed, on a light diet, with

free movement of the bowels. With this treatment they become much better operative risks.

A most important factor in connection with any operation is the bringing together of the tissues without tension. There is no use pulling the internal oblique down to Poupart's ligament if it cannot be done without tension. The tissues will not heal and the sutures will cut through in from twenty-four to forty-eight hours. When apposition without tension is obtained healing will take place readily and will not interfere with the circulation.

In the closure of the lower part of the inguinal canal Bloodgood utilizes the rectus muscle in all cases in which the internal oblique is not sufficiently strong. The sheath of the rectus posterior attachment of the internal oblique is cut by a slit two and one-half to three inches in length which frees the fibres of the rectus, making the closure of the lower half of the inguinal canal very satisfactory. The internal oblique can usually (even in the worst cases' be utilized in closing the upper half of the canal.

DR. ARTHUR N. COLLINS, Duluth: I want to subscribe to the transverse incision. I have used it quite a little in the last year or two, in double hernia cases and I find it very useful. This incision is easily closed, and one can repair both canals at the same time. There is less time consumed in the operation.

I was much interested in the length of time of keeping these patients in bed after operations for hernia, namely, from six to eight or ten days. During a recent visit to the Navy Hospital at the Great Lakes Training Station, I was informed by one of the Navy surgeons that a regulation of the Surgeon-Generals' Department required men operated on for hernia to remain in bed three weeks.

THE SURGICAL TREATMENT OF TRAUMATIC EPILEPSY*

ARTHUR C. STRACHAUER, M.D., F.A.C.S.
Minneapolis, Minn.

Surgeon to University, Abbott, Northwestern, St. Mary's and St. Andrew's Hospitals.

The successful treatment of traumatic epilepsy depends upon the eradication of the causative factors and the prevention of their recurrence. Prophylaxis is an equally or even more important consideration. The surgery of this condition when judged by these precepts will frequently be found lacking in one or all of these requirements. Extenuating circumstances, such as infection in a compound fracture may make inadvisable the performance of a complete one-stage operation. The surgeon's obligation for the complete operation is not, however, thereby lessened.

Pathology: A depressed fracture of the skull, exuberant callous formation following the removal of the depressed fragments, spicules of bone penetrating the brain cortex, foreign bodies, as bullets and fragments of metal, adhesions between the brain and the dura, cortical cicatrices and traumatic cysts, may individually or collectively in groups be responsible for the development of epilepsy. Concussion of the brain may be followed by epilepsy. It is usually general in character and not a favorable type for surgery.

Prophylaxis: This is probably our most important consideration, and begins with the recognition or diagnosis of a fracture and cerebral hypertension. Shaving the scalp greatly facilitates the palpation, percussion and examination of the skull, and should be a routine procedure in suspected fracture cases. X-ray pictures should be taken at different angles and include a stereoptican study. If the outer table is fractured, the inner plate is usually more extensively damaged. Fracture of the inner table with depression of the fragments may occur without fracture of the outer table. An incomplete X-ray examination may be worse than useless when negative, in giving a false sense of security. Unless the plates are good and the examination complete, the case should not be considered as having been X-rayed.

Every depressed fracture should be at least elevated or have the fragments removed. This, however, is usually not enough. Our real interest in a fracture of the skull is the presence and extent of damage to the brain and its membranes. The construction of an osteoplastic flap with the depressed area at its center has the advantage of permitting of a careful examination of the dura and the brain and attention to its injury when required. Hemorrhage is controlled and extradural clots removed. On examination of the dura, if pulsation be absent, and it appears dark or cloudy, incise for subdural hemorrhage or clot. An incision one-sixteenth of an inch in length is sufficient for diagnosis. Subdural blood clots slowly become organized and form adhesions between the brain and the dura. Large clots between the layers of the brain coverings

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may absorb and form meningeal cysts. Such adhesions and cysts may be the irritative factor producing epilepsy. Dural lacerations should be carefully approximated by fine sutures, or, after removing the ragged edges, should be covered with some membrane in an effort to prevent adhesions forming to the cortex. The wound must be absolutely dry at closure. The writer has employed autoplastic facia lata transplants with a thin layer of fat, the fat side placed down, with entire satisfaction in two such cases. Before closing the wound, the depressed area in the osteoplastic flap may be forced back from the inner surface and the flap returned, or the entire bone flap be removed. A defect in the skull bears no ill consequences.

If the depressed fragments be removed, without the formation of a flap as described, it is most important to bite the bone margin away all around the fractured area, leaving a smooth, clean and even circumference. Rough lacerated bony margins commonly develop excessive exuberant callus which exerts pressure on the underlying brain, and so may cause reflex epilepsy. The endosteal layer of the dura and periosteum are limiting membranes, and when lacerated and ripped up from their attachment do not confine the bone, thus permitting the formation of marginal hyperostoses, hence the necessity for leaving a smooth, even margin to the fracture defect.

As an exception to the above, depressed fractures over the longitudinal or lateral sinuses should not be disturbed; a decompression elsewhere, preferably a subtemporal Cushing decompression, being performed to relieve and offset the increased intracranial pressure.

All skull injuries complicated by cerebral hypertension, as shown by the ophthalmoscope and mercurial manometer, should have a single or bilateral subtemporal decompression performed, not alone to prevent death from medullary compression, but to avoid the secondary compression effects, viz., headaches, dizziness, mental derangements, changes in character, general epilepsy, etc.

Surgical Treatment of Traumatic Epilepsy: Cases of traumatic epilepsy should be operated upon as early as possible after the incidence of the convulsive attacks, that is, before "epileptogenic changes" occur in the brain. The likelihood of betterment diminishes in inverse ratio to the duration of the epilepsy. However, in well established cases, even though the attacks be not entirely stopped, they are apt to be lessened in severity and the interval between their occurrence prolonged provided the operation results in the removal of a definite macroscopic lesion. In order to obtain a result from a gastroenterostomy a definite macroscopic lesion must be demonstrated. The condition in epilepsy is parallel, and in the absence of such a definite lesion further surgery is meddlesome.

In the presence of a depression or defect, a horseshoe shaped flap of scalp is formed at the site of the lesion and turned down with its base attached to the arterial supply. In the case of a defect, extreme caution must be exercised in elevating this flap by sharp dissection from the frequency present dense scar attachment to the underlying brain cortex. The margin of the defect after detaching the adherent dura is carefully examined for exuberant callus, and the same when present removed. One of the writer's cases had marginal callus pressing upon the underlying brain for a depth of one-half inch below the level of the inner plate of the skull. Scarred and adherent dura, when extensive, had better be removed entirely. Small adhesions may be carefully separated without sacrificing the dura. Cysts should be evacuated and the sac removed, or at least partly removed. A cortical scar when present should be excised clean and smooth, down to the white matter if necessary. A cataract knife has been found very satisfactory for this purpose. Foreign bodies, as a bullet or piece of metal, should be carefully removed and when necessary through a clean cut incision into the brain cortex rather than through laceration of the same. Edema of the pia is frequently present and may be relieved by numerous small needle pricks.

Cases of persistent headache, dizziness, changed character and mental derangement following trauma have been improved and cured by the operation of decompression.

The Prevention of Recurrence: The removal of the cause in traumatic epilepsy without the prevention of the recurrence of such cause is usually wasted effort. Exuberant marginal callus widely removed, leaving a clean-cut

smoth border, does not recur. Cysts from which half of the sac, and preferably the entire sac, is removed are permanently destroyed. A cortical cicatrix removed smooth, dry, and aseptic, heals with slight and minor scar formation. The scars from aseptic operations on the brain do not cause epilepsy. The surgical problem now becomes the prevention of adhesions of the brain to the meninges, scalp or skull, and the supplying of the defect in the removed dura. Cargile and Hanel's membranes, celluloid, gold foil, and rubber tissue have been employed for this purpose with varying degrees of success. Perthes reports the use of fresh hernial sac in seven cases with success in six, and death in one due to infection. Lexer and Binnie both report the implanting of free flaps of fat in cases of traumatic epilepsy with very satisfactory results. Kirschner, in 1912, reported seventeen cases in which fat free fascia lata was employed, stating that in the cases where implantation was made to replace dura pathology, there were no more convulsions.

The writer has employed autoplastic transplants of fascia lata with a thin layer of fat in eleven brain cases, nine epilepsy, and two as prophylactic measures. The graft is obtained from the patient's thigh right at the time of the brain operation and placed in situ fat side down. It is obtained and handled entirely with instruments, is not touched with the gloved hand, and is sutured snug and taut into the defect. In all cases the transplanted fascia healed without reaction. One case was not at all improved. Convulsions recurred in the hospital as before the operation. The patient was not made any worse by the operation. The other cases have all been greatly improved. Insufficient time has elapsed to permit of final conclusions in the series of cases. One case has remained entirely cured for over four years. Some of the improved cases have been able to resume their occupations as a result of the decrease in the frequency and severity of their attacks. One case previously incapacitated is able to perform manual labor due to the additional great improvement in a spastic paralysis of an upper and lower extremity.

In conclusion: Every skull injury should be viewed as to its epileptic potentiality. It is evident from the character of the pathology causing traumatic epilepsy that the condition is frequently preventable by the appropriate treatment of the primary injury. The surgeon's responsibility in a skull trauma does not cease until complete preventative efforts have been instituted, even though several operations are required. When the attacks are established many of the cases can be improved and some cured. The mental deterioration in epileptics is so rapid and their plight so pitiable that even improvement is an unmeasurable blessing.

DISCUSSION

DR. W. A. COVENTRY, Duluth: A few years ago I had occasion to see a man who was the driver of a brewery wagon, and, during an attack of epilepsy fell off of the wagon. On examining him carefully I found that his hair was fortunately very short and I discovered a small scar in the upper part of the occipital bone. I learned that when a small child he fell off of a chair and his head hit the end of the iron on the fireplace which laid him up for some time. As a result of this injury he had a triangular scar. I put the proposition up to him of doing a decompression operation. He consented to have the operation done. I did a decompression, removed a good sized button of bone, and found an exostosis on the inner table of the plate of the skull which was removed. It is now ten years since the operation was done; the man has not had a convuslion since, whereas, before that time for a period of at least four years before I saw him he was having convulsions on an average of twice a week.

DR. A. W. ADSON, Rochester, Minn.: I have certainly enjoyed Doctor Strachauer's paper, as since it has been my privilege to operate upon a goodly number of patients with epilepsy I can fully appreciate the difficulties that are encountered.

Doctor Strachauer has emphasized two very important points; one, the early surgical treatment of skull injuries, and the second, the radical treatment of such injuries at the time of operation. We all appreciate that the treatment of epilepsy is one of more or less uncertainty and that we can accomplish more in preventing epilepsy by the early treatment than we can in operating upon bony defects, various forms of adhesive meningitis, old hemorrhages, or cysts of the brain.

With reference to the operative treatment following injury, it is important that the wounds be thoroughly exposed, that bone fragments and foreign bodies be removed, and that proper drainage be used. One must also bear in mind the possibilities of brain abscesses, which, if treated in time, give an uneventful recovery. Following the immediate treatment, it is frequently advisable to consider doing the various plastic operations and the closing of the bony defects before epilepsy sets in, but I agree with Doctor Strachauer that in patients with a definite

Jacksonian epilepsy or in patients with grand mal epilepsy with localizing signs, one is justified in making a large exploration and performing a radical operation, such as the removal of the cysts or even the removal of destroyed cortex and the use of foreign membranes, and particularly the fascia lata for coverings.

DR. ARCHIBALD MACLAREN, St. Paul: I have had the privilege of watching and seeing several of these cases that Dr. Strachauer mentioned, and we feel at the University Hospital that the suggestion of using fascia lata with the attached fat to cover these defects is a useful one, and in most instances accomplished a very excellent purpose.

DR. STRACHAUER (closing): I wish to thank the gentlemen for the discussion of my paper.

There are several points which may bear emphasis. This proposition of shaving the entire scalp is most important. Head injuries commonly receive a one-half inch shave on either side of the scalp wound. Shaving the entire scalp permits of a thorough examination, and if the practice were more generally employed it would greatly reduce the number of major lesions which are being overlooked.

Cerebral hypertension, that is increased intracranial pressure, may be present in the absence of a skull fracture. A blood vessel may be lacerated from the traumatism and a hematoma form. The hematoma may be absorbed without the formation of adhesions, or following organization and adhesion may develop between the cortex and the dura. Such an adhesion may be responsible for the development of epilepsy. Meningeal cysts secondary to the hemorrhage may likewise be responsible for the epilepsy. If the intracranial hemorrhage be not recognized, the hypertension may become excessive to the degree that the patient may die of medullary compression. Medullary compression manifests itself in the lower grades by slowing of the pulse and in the excessive degrees by the very rapid pulse. By the use of the ophthalmoscope the early edema of the increased pressure may be seen and the condition definitely diagnosticated. Highly developed brain tissue will not stand the great insult of increased intracranial pressure. A subtemporal decompression is indicated and emergent to permit the brain to bulge and be relieved. If unrecognized; these are the cases which develop epilepsy and changed personality.

THE ETIOLOGY, PATHOLOGY AND PATHOGENESIS OF PAPILLEDEMA*

PAUL D. BERRISFORD, M. D.,
St. Paul, Minn.

It was Türk, in 1853, who first called attention to the ophthalmoscopic changes in brain tumor; however, to V. Graefe (1860) must be given the credit as the first to describe choked disc and to establish its relationship with intracranial pressure.

It is not the purpose of this paper to deal at length with papillary ectasis in its entirety, but rather to outline a compendium on the etiology, pathology and pathogenesis of the condition, facts and theories reported in current literature. That various terms are frequently applied interchangeably to name acute pathological changes in the optic nerve head—papillitis, papilledema, papillary ectasis, choked disc, neuritis intraocularis, optic neuritis, etc.—has given rise to no little confusion in terminology and vagueness of expression. The author will, therefore, attempt to clarify the subject in his endeavor to define papilledema. The terms papillitis and neuritis intra-ocularis are synonymous and may be applied to any inflammatory process involving the optic nerve head regardless of the degree, mode of production or causation. In the opinion of the writer, the expression "neuritis optica intra-ocularis" might well be substituted for the less qualifying term "neuritis intraocular" now in common usage.

For the purpose of classification and description, inflammatory conditions of the optic papilla grouped under the general title "papillitis or neuritis optica intra-ocularis" may be subdivided into three clinical entities, (A) Neuroretinitis, (B) descending optic neuritis, (C) choked disc.

(A) As the optic nerve is in anatomical and physiological continuity with the retina inflammatory processes attacking one may and not infrequently does involve the other. As a consequence, a descending optic neuritis or choked disc, strictly speaking, may in some instances come under the heading of neuro-retinitis. However, common usage has decreed that this term

*Read before the Minnesota Academy of Opthalmology, as a contribution to a Symposium on Choked Disc.

be restricted to conditions arising from grave systemic disorders such as diabetes, Bright's disease, syphilis, artero-sclerosis, leukemia, sepsis, etc.

(B) and (C) The terms descending optic neuritis and choked disc include only such inflammatory changes in the optic nerve-head that arise as a consequence of intracranial disease. Descending optic neuritis, as the name implies, denotes an inflammation of the optic nerve that has advanced from the brain peripherally. In contradistinction, choked disc begins at or in the neighborhood of the papilla and tends to extend towards the brain.

What are the distinctive features from an ophthalmoscopic standpoint that characterize neuro-retinitis, descending optic neuritis and choked disc? Without entering into a description of the various forms of neuro-retinitis in prototype it may be said that certain distinctive findings are common to the group. There is redness and cloudiness of the papilla with obscurations of its margins due to peripapillary edema although there is usually very little elevation of the disc. A broadening and tortuosity of the veins and a moderate contracture of the arteries is a constant finding; white spots and hemorrhages are the rule. The white areas may take the form of streaks lying along the course of vessels or may appear as circumscribed areas of exudation, whitish or yellowish plaques, discrete or confluent. Hemorrhages when situated in the superficial layers of the retina are feathery or flame-like; in the deeper layers they frequently appear roundish. The edematous disc and its radially streaked margins are not infrequently spotted with hemorrhagic areas together with whitish plaques which in places hide the retinal vessels.

In descending optic neuritis the papilla may present an appearance quite similar to that described above with this distinction; there is little or no retinal involvement.

The term "choked disc" implies enormous swelling of the disc which may reach as high as 8 or 10 diopters. The papillary edema is usually quite definitely delimited to the disc margins the surrounding retina showing little if any change. At times the papilla is found mottled with hemorrhages and its vessels ensheathed with white exudate. The veins are extremely tortuous and dilated with arteries markedly contracted.

Unfortunately an ophthalmoscopic picture of neuro-retinitis, descending optic neuritis or choked disc does not always confine itself to type—a point of decided clinical importance. The fundus finding in intracranial disease (descending optic neuritis, or choked disc) may assume an appearance exactly like a neuro-retinitis of kidney disease including the starshaped figure at the macula. Per contra, a neuro-retinitis due to renal disease, diabetes, syphilis, etc., may present a papilla with marked elevation and very little if any retinal involvement. Therefore, it is a part of wisdom that the ophthalmologist arm himself against error when inspecting a neuro-retinal inflammatory condition by applying the general term "neuritis optica intra-ocularis" until the true etiology of the malady be established through a careful consideration of all clinical findings. By this means we may readily assist the surgeon who declares "We must rely upon the oculist for an early diagnosis of choked disc."

The expression "papilledema" is rather abstract in its meaning, and as the name would signify, calls to mind edema of the disc as the most conspicuous ophthalmoscopic finding from whatever cause. As papillary edema arises most commonly as a consequence of intracranial disease, the expression "papilledema" is frequently used interchangeably with "descending optic neuritis" or "choked disc," particularly the latter, if the degree of papillary elevation be not in the extreme.

Brain Tumors

Gowers hold that choked disc obtains in 80% of all cases of brain tumor; Annuske and Reich observed this phenomena in 95% of cases collected from the literature recording 88 instances; Oppenheim found 90% in 100 cases. Concerning the relative frequency of choked disc in tumors effecting various parts of the brain, Edwards and Lawford found papilledema in 20 out of 23 instances of cerebellar tumor, in 74% of tumors affecting the base and in 50% of tumors affecting the convexity, facts compiled from a series of 107 cases. A point of clinical interest was first brought out by Grosz; the relative infrequency of choked disc in tumors affecting the

convexity of the brain is doubtless due to the protection afforded the basal parts by the dense tentorium cerebelli.

Papilledema is usually an early sign in tumors of the cerebellum and base, while in cerebral tumors particularly those of the frontal lobes, it is late in its occurrence. Unilateral choked disc is extremely rare and when present is generally the result of a tumor situated near or extending to the chisma or optic nerve of one side. By the pressure of the tumor on the optic nerve the vaginal space becomes compressed, with the result that the cerebrospinal fluid exerts pressure by way of the opposite vaginal space only, with a resulting monocular papilledema.

Kampherstein collected 72 cases of brain tumor accompanied by choked disc which are proportioned as follows: cerebellum 23; frontal lobes, 12; temporal lobes, 6; central convulsions, 4; occipital lobes, 5; epiphysis, 2; third ventricle, 2; corpus callosum, 3; optic thalamus, 2; colleculi, 7; hypophysis, 3; fourth ventricle, 1; cerebellar peduncles, 2.

Tuberculosis

In 200 cases of choked disc Kampherstein found tuberculosis 9 times, 8 cases of solitary tubercle and 1 of chronic tuberculous meningitis. The commonest site for a solitary tubercle is the cerebellum or pons. Uhthoff studied ophthalmoscopically a large series of cases affected with tuberculous meningitis. He found a moderate degree of optic neuritis in 25% of cases, 5% of which were unilateral, typical papilledema occurring in 5% of cases all of which contained a solitary tubercle in the brain accompanying the meningitis.

Syphilis

In the 200 cases of choked disc reported by Kampherstein, he found syphilis the etiological factor in 23% of cases, 8 cases of gummatous meningitis and 15 cases of various other luetic affections; Schott in 50 cases found syphilis the cause in 17%; Uhthoff in 100 cases, 14%, 8 cases of basal gummatous meningitis and 4 cases of gummatous tumors. In 150 autopsies reported in the literature choked disc was produced by cerebral lues in 10% of cases. Nonne, Hutchinson, Oppenheim and Uhthoff are unanimous in their opinion that papilledema produced by a syphilitic infection offers an unusually favorable prognosis both functional and ophthalmoscopic. In gummatous meningitis of the base, choked disc is commonest, rarely occurring when the convexity is affected (Gowers, Nonne).

Brain Abscess

According to Deutschmann the comparative rarity of choked disc in brain abscess is due to the thick capsule which prevents the distribution of the pathogenic material. Kampherstein from a series of 155 cases of brain abscess was forced to the conclusion that papilledema occurs in from 25-30% of cases. In his series of 200 cases of choked disc from various causes found brain abscess the causative agent in 3½% of the number. Recurrent papilledema following operation has been reported by several authors, a condition explained by the proliferation of granulation tissues.

Otogenous Purulent Meningitis

It has been found that in uncomplicated purulent meningitis as a result of ear infection, optic neuritis is rare, a typical choked disc being usually the result of such complications as cerebral or cerebellar abscess, subdural abscess, sinus thrombosis, etc.

Hydrocephalus

The infrequency of choked disc in hydrocephalus of children is undoubtedly due to the expansion of the skull under increased intracranial pressure. Uhthoff collected 46 cases exhibiting this neurological finding most of the patients being over 14 years of age. In all probability most of these cases in adults were secondary in origin and due to a serous meningitis.

Thrombosis

Uhthoff states that thrombosis of the cerebral sinuses causes choked disc is 18% of cases although pathological changes are to be found in the fundus in 54%. In only 25% of cases can the condition be considered uncomplicated, 33% having meningitis, 20% subdural abscess, 15% cerebral abscess, 7% cerebral abscess and arachnitis. Papillitis often commences on the side of the lesion and continues more pro-

nounced on that side, a point of diagnostic importance. Exophthalmus in case of thrombosis of cerebral sinuses of otitic origin nearly always implies an involvement of the cavernous sinus and orbital veins and is much less common than in thrombosis of the cerebral sinuses from other causes.

Intracranial Hemorrhage

Hemorrhages within the cranium may produce choked disc and this complication unquestionably occurs more frequently than one would suppose judging from the number of cases reported in the literature. This may be accounted for by the fact that an ophthalmoscopic examination is seldom made. Bleeding may arise from two sources, 1st—injury; 2nd—the result of diseased blood vessels e. g. hemorrhagic pachymeningitis, purpura, etc. In 7 cases of fractured skull blood was found in the subdural space and vaginal space of the optic nerve.

Aneurysm of the Cerebral Arteries

Papilledema is rare in cases of cerebral aneurysm and only post-mortem examination can establish the diagnosis. Such vascular enlargements are usually found at the base—carotids, vertebral artery, basilar artery, circle of Willis, etc.

Cranial Deformities

The tower skull is often associated with internal hydrocephalus with a resulting choked disc. Exostoses may also be a factor in its production.

Cysticercus

In Kampherstein's series of 200 cases of choked disc, from various causes, cerebral cysticercus was the etilogical factor in two cases.

Other conditions such as multiple sclerosis, dementia paralytica, neuritis of pregnancy and the puerperium and such drugs as arsenic, lead, mercury and methyl alcohol may, in rare instances, produce papilledema disc.

In chlorosis, pernicious anaemia, leukaemia, scurvy, purpura hemorrhagica and hemophilia pathological fundi may result although a typical papilledema in an extreme rarity.

Affections producing unilateral choked disc such as diseases of the orbit and accessory sinuses need not be dealt with here.

The Pathology of Choked Disc

The primary cause of papilledema has given rise to much speculation. Whether this pathological entity be the result of primary edema or an inflammatory process has yet to be solved. The microscopical appearances of the optic nerve head as the result of experimentally produced intracranial pressure may throw some light upon the question although it must be said in truth that such a result is hardly analogous to the condition found clinically. Difficulty has been experienced in obtaining pathological material during the earliest stage of choked disc. Where pathological sections have been examined, observers are far from unanimous in their reported findings; yet certain histological entity stand out conspicuously and are in a sense characteristic.

Kampherstein examined 51 eyes collected by Uthoff 65% of which showed distention of the vaginal space. Elschnig in 26 cases found about the same proportion, thus establishing a fact well worthy of note. The earliest cases showed the least distention, the subarachnoid space being most affected, the arachnoid having been pressed against the dura and later fused with it. As a rule the dilatation was most marked near the globe although in some cases the site of entry of the central vessels was the place of election. In 38 of the 51 cases there were inflammatory signs in the sheath spaces. The inflammatory changes in papilledema vary enormously in degree and appear to bear no constant relationship to changes in its sheaths.

In the nerve the nuclei of the individual nerve bundles are increased by reactive proliferation of the glia cells always densest behind the lamina cribrosa. According to Kampherstein, the chief feature is edema being more or less evident in 60% of cases. He found intrafascicular edema the most characteristic finding, interfascicular edema appearing less commonly and always accompanied by the former.

The bowing back of the lamina cribrosa is an almost constant finding—Elschnig 41 out of

44 cases; Kampherstein 33 out of 42 cases. However, in the atrophic stage, the lamina cribrosa returns to its normal position. According to many, whether a pathological ophthalmoscopic picture be one of choked disc or optic neuritis rests in the determination of the position of the lamina cribrosa microscopically. In 15 out of 42 cases reported in the literature there was no sign of inflammation to be seen under magnification, the condition being one of primary edema only.

That new formed connective tissue makes its appearance in the physiological cup is shown by the presence of fibroblasts which stretch forward forming a membrane over the surface of the elevation. Edema extends for a considerable distance into the surrounding retina occupying mainly the nerve fiber layer although frequently extending into the inner and internuclear layers. Occasionally the retina at the edge of the disc becomes detached.

In papilledema the consequental atrophy that frequently follows is a neuritic degeneration consisting of septal thickenings, with a slow disappearance of nerve fibers and neuroglial proliferation.

Pathogenesis

Although much has been written concerning the pathogenesis of papilledema and no small amount of experimental work performed, no theory yet advanced has met with universal approval. Graefe believed that papilledema arose as a consequence of a tumor which either directly or indirectly exerted pressure upon the cavernous sinus thereby producing a congestion of the ophthalmic vein and artery. This view was practically abandoned when Seseman called attention to the fact that there are communications between the veins of the face and the ophthalmic veins.

A theory resting upon Schwalbe's demonstration that the subarachnoid space is continuous with the vaginal space of the optic nerve, was advanced by Schmidt-Rimpler. He holds that owing to the increased intracranial pressure the flow of cerebrospinal fluid is impeded; as a result it is forced into the lamina cribrosa. There are those who question this hypothesis believing that either the central retinal vessels are compressed by the distention of the sheath or that a kinking of the central veins takes place following hydrops of the optic nerve sheath.

That anatomical observations fail to give unanimous support to these mechanical theories prompted Leber to search for another cause. He brought forth the inflammatory theory. It was his contention that certain cytotoxic substances are liberated which pass into the cerebrospinal fluid and eventually are disseminated to the optic nerve sheath, nerve and papilla producing edema and inflammation. On anatomical grounds his theory is supported by such men as Edmunds and Lawford, Zellweger and Haab, Elschnig, etc. Rochon-Duvigneaud considers the condition one of long continued action of stagnant lymph. Kruchmann believes that leucocytic infiltration is the result of the action of positive chemotactic substances producing necrosis and disintegration of tissue and that these substances are elaborated by the destruction of tumor cells.

Perhaps the most valuable experimental evidence yet obtained has resulted as a consequence of Schieck's experiments. He found that in the initial stage of papilledema the central vein is unquestionably compressed within the nerve, while outside the nerve the vein is free from engorgement. The vein is neither compressed as it passes through the dura nor is it influenced by external pressure while traversing the intervaginal space. As a result of his experiments he has built up a highly theoretical hypophesis. He holds that at the place of exit of the central vessels from the optic nerve, two currents of lymph are encountered in the intervaginal space, one flowing centrally from the vitreous chamber by way of the hilus of the papilla through the perivascular lymph spaces of the central vessels, the other flowing away from the brain, by way of the subarachnoid space. He claims that these two currents in the intervaginal space are under perfectly even pressure; should the intracranial pressure increase as a result of internal hydrocephalus, etc., the outflow from the vitreous would be impeded with a consequental increased pressure within the perivascular lymph spaces producing a picture of venous stasis. Inflammatory symptoms fol-

low upon the trail of primary edema and are the result, in part at least, to the production of decomposition products in stagnant lymph and deleterious substance elaborated from the destruction of tissue.

In conclusion it must be reiterated that in the face of conflicting findings and theoretical suppositions, the true factors that give rise to papilledema remains as yet unsettled. Yet in lieu of the small number of cases that have been examined histologically in its earliest stage presenting almost universally distention of the perineural lymph sheaths of the optic nerve, a bowing forward of the lamina cribrosa and a primary edematous involvement of the disc without inflammatory reaction, the author is strongly of the opinion that the mechanical theory must stand. That inflammatory changes do appear pathologically in the later stages in a large proportion of cases owes its explanation to the toxic effect produced by cytotoxic substances elaborated from the degenerating tumor mass, the products of stagnant lymph or somatogenic material formed in necrosing nerve or nerve sheaths.

One point in favor of the mechanical theory stands out preeminently. Clinical evidence obtained through the results of cerebral surgery has established the fact that dural incision relieves intracranial pressure. That this surgical procedure acts favorably upon the edematous disc is incontestable; without it many cases would result in blindness.

TREATMENT STUDY OF OTOSCLEROSIS*

By J. A. Pratt, M.D., F.A.C.S.
Instructor of Ophthalmology and Oto-Laryngology, University of Minnesota
Minneapolis, Minn.

The Etiology of Otosclerosis is still an open question. The morbid changes associated with Otoscelerosis in the past was fixation of the stapes, but we now know that this may be due to fibrous bands caused by inflammation. While the bony changes around the stapedio-articulation causing ankylosis is present in Otosclerosis, there may be changes in other parts of the bony capsule that would interfere with tone. We can have interference with tone reception and still have the stapedio-articulation practically normal.

With the destruction or limit of tone by these bone changes, we may account for the loss of hearing in certain range of tones. The time of hearing may be increased for the lower tone and shortened for the higher tones, so any particular change in tone length would not necessarily be symptomatic. This bony change may be in the stapedio-articulation, in the labyrinth, cochlea or any part of the petrous bone as well as other bones in the body, as cited in Osteomalacia and Acromegalia.

The hypothesis of Gray, "That Otosclerosis was due to a failure of local blood supply, due to some depressed systemic condition," might be assumed as caused by some disturbance of internal secretion.

A classical Otosclerosis would have the following symptoms: Gradual deafness; tinnitus present; paracusis present; absence of chronic tympanic disease; patent eustachian tubes; lower tones raised, higher tones nearly normal; Rinne' Gelle negative. One could hardly miss a diagnosis with these signs present which signifies an Otosclerosis with fixation of the stapes. If the bone changes have affected other parts of the labryinthine capsule, the diagnosis becomes more difficult. The flushed spot on the drum over the promontory, might be caused by middle ear congestion and a thin membrane, so it could hardly be a classical sign.

Some have lost view of the fact of seeming heredity; that it progresses rapidly, then will seemingly be dormant for a number of years, or become a little better; that it can be complicated by other ear disease, which when removed leave us with the fundamental Otosclerotic condition; that these patients are nearly always past middle life and have the appearance of being poorly nourished, or in poor physical condition, and yet claim that they are feeling as well as usual.

In the pathology of this condition, we know that there are certain changes in the bone surrounding and including the internal ear. First a softening and absorption, then a return to a new bone condition, followed by a Sclerosis. This condition existing in any or all parts of the bony labyrinth, as well as the other bones in the

*Entrance Thesis to Minnesota Academy.

some individual, points to the fact that there is some disturbance in the control governing nutrition of tissue. We know that strong and weak glands and organs are transmitted, for we know they run in families. We have to look for a disturbance in the secretion of the substance that controls these conditions, and it seems better answered by the internal secretions.

At the meeting of the Ninth International Otological Congress at Boston in Aug. 1912, I had the pleasure of hearing a paper by Dr. Richard Lake of London on, "A Case of Early Otosclerosis Treated by Radium." The significant points in the report, was not the treating by Radium, but that the patient at times was in an extreme nervous condition, that at three different periods during the three years of observation, she had a rapid loss of weight, which shows from recent studies, that there was at these times some imbalance in the internal secretions, undoubtedly a hyper-secretion, which may have accounted for the slight improvement in the condition. One other point in the case was the absence of some of the classic symptoms. This fact should be remembered, that we rarely find a classic Otosclerosis, but as a rule in combination with other ear diseases.

The standing still of the cases for months and years, might indicate the equalization of the internal secretions, or the hyper or hypo-secretions of some substance that would act favorably on the Otosclerotic condition.

In the discussion of this paper, Dr. Neumann of Vienna, said that the etiology of Otosclerosis was unknown, and that Dr. Denkers hypothysis of the participation of the Hypophysis might just as well be connected with any other gland.

These glands have inherited weakness, they hyper and hyposecrete, and the different strain of symptoms show themselves under different conditions.

In considering the internal secretion, we have to deal particularly with the thyroid, thymus, hypophysis and the adrenals. Other so considered ductless glands, will not be considered in this discussion, but possibly may be found involved in the future discussion on Otosclerosis.

Of these glands, the hypophysis and adrenals particularly influence bone growth. While the thymus also affects bone growth, it seems to be most particularly in control during the early months of life. It is supposed to disappear at puberty.

We see our bone and tissue change in Myxedema, which returns to normal on the administration of thyroid extract. The removal of either the thymus, hypophysis, pineal or suprarenal glands is followed very quickly by death. While the hypophysis and suprarenal act in control to the thyroid, they can particularly replace each other. As we have some ductless glands that seem to control the physiological changes in the bone, is it not possible that some cause acting on these glands tends to a hyper or hypo-secretion and causes changes in the bony capsule of the ear, the same as we know it does in Osteomalacia and Acromegalia?

It has been found experimentally that with hypo-secretions of the suprarenals, we have symptoms of Osteomalacia, which changes return to normal with the injections of Adrenalin. This point is extremely interesting in the eitology and treatment of Otosclerosis.

The cause of the effect on the secretion of the glands has been suggested as some focal infection or chronic intestinal condition.

If the hypothesis that hypo-secretion of the ductless glands influencing bone matabolism, is a cause of Otosclerosis, and we are unable to find any focal infection, or other cause effecting the secretion of these glands, the line of treatment would be to supply this deficiency until condition would become favorable to an establishing of normal secretion.

In this very shallow study of 18 cases, I have simply tried to raise to a normal index the hypo-secretion of the thyroid and suprarenal glands. In my new series, I am searching out all focal infection and removing them as far as possible.

We based the diagnosis of these 18 cases as Otosclerosis, or suspicious on the following symptoms: Physical signs, progressive deafness, tinnitus, paracusis, condition of eustachian tube, Rinne', Gelle', high tones, low tones, Goitre and goitre in the family, hearing in the family.

All of the 18 cases had normal physical signs, deafness was progressive, noise was present, and tubes open. As to paracusis, fourteen were positive, two were doubtful, and one was negative. In the Rinne' test, eleven were negative in both ears, six were positive in both ears and one was negative in the right ear and positive in the left.

In the Gelle' test, six were negative, five were positive, six were unable to tell, and one was positive in the right and negative in the left. In the hearing of high tones, fourteen heard them better and four were undecided on either high or low tones. Six of the cases had goitre. In one the father was otosclerotic, in another, the mother, and in a third the father and sister, a number were unable to tell.

Several of the cases were unable to continue with the thyroid tablets, two of these having small goitres, but no hyper-secretion symptoms until the tablets were taken. Four cases were unable to take either thyroid or suprarenal tablets.

Thirteen of the cases improved in hearing, two improved only in one ear. Two showed a retrograde of hearing in the third month but still nearly 100% improvement.

Tinnitus was better in three cases, and disappeared in three cases. The others were not improved.

Two cases were under observation only one month; eleven, two months; seven, three months; four, four months; and one, five months.

The improvement in these cases are far too good. In the short period of study of some of them, the slight improvement might be due to a reduction of congestion.

In eleven of the 18 cases that came for examination at the end of sixty days, two showed no improvement in either ear, two showed no improvement in one ear and a retrograde in the other. Two showed no improvement in one ear and improvement in the other; while five showed improvement in both ears.

At the end of ninety days, seven reported for examination. Of these, one showed a retrograde in both ears. One showed no improvement in one ear and a retrograde in the other. Three showed no improvement in one ear and improvement in the other. One showed improvement in both ears, and one showed improvement in one ear and a retrograde in the other.

At the end of one hundred and fifty days, only one reported for examination. Her improvement was from two inches in the right and three inches in the left to six inches in both ears.

Of the eleven cases that reported at the end of sixty days. The tinnitus in six was better. The tinnitus in three of these six cases had disappeared at the end of ninety days.

At the end of one hundred and twenty days of treatment, three cases maintained their improvement. At the end of one hundred and fifty days, treatment of one that reported showed a great improvement and this case had remained stationary for ninety days previously.

The question is were these cases improved by the medication or was the improvement due to the clearing up of some condition affecting the ears? If the cases were followed still further would the improvement still continue, or would they go back to their old conditions?

At the end of this time I left Aurora, Ill., where I was practicing and have no further record of these cases. As I did not expect to report these cases, my examinations were not as thorough as I am now conducting my new series of cases, and I hope to be able to follow the cases over a longer period. After establishing a dosage that gives no physical results, I expect the patient to continue and report each month for examination test.

SOME LEGAL ASPECTS OF MEDICINE AND SURGERY*

By Mr. George W. Peterson,
St. Paul, Minn.

The late Senator Davis of Minnesota, delivered a series of lectures on International Law to the student body of our University about twenty-five years ago. He prefaced what he had to say, by observing that every professional man owed a debt to his profession, and that debt he was trying to pay in part, in the preparation and publication of his lectures on a theme than specially affected with a public interest, because of the entanglements of our own country with Spain, and our growing importance as a world power. Senator Davis got the thought of owing something and leaving something to his profession from Lord Bacon, who had expressed the same sentiment.

The truth is that professionally and otherwise, "We are heirs of all the ages, in the foremost files of time" and adapting a line from one of

*Read at the meeting of the Southern Minnesota Medicine Association, Jan. 21-22, 1919 at Mankato.

the war poems, this body of elder medical men says to the younger medical men:

"To you from falling hands the torch we throw,
Be yours to hold it high."

In fine, your clear obligation is, to pass on the science and practice of medicine and surgery, richer and better than you received it. It is to that end and for that purpose that you are here.

"Something attempted, something done,
Has earned a night's repose."

And the principle that the more you do, the more is expected of you, has gotten into the obligations of the law. It was the ancient law that the physician and surgeon should have the skill of his profession in the community where he practiced, using, of course, ordinary care. In other words if the standard of professional skill was low in the community, or if the physician possessed all the skill there was, because he was the only practioner, the obligation of the law was met. But this rule was modified and extended by the recent case of Viita vs. Fleming (132 Minn. 128) a fracture case, in which the Court held that a surgeon living at Carlton, was in the community of Duluth, that medical associations frequently met in the larger centers, where the skill and learning of the profession were set out, and for the purpose of the standard of skill, it was the duty of the physician and surgeon to keep in touch with the doings of medical associations, and the published contemporaneous literature of the profession. In short the community doctrine was extended, and, to illustrate, the professional man at Jasper is cosmopolitan, and his environs includes Mankato, and Rochester.

Rochester, a name to conjure with! You know it was Emerson who said:

"If a man can write a better book, preach a better sermon, or make a better mousetrap than his neighbors, though he build his house in the woods, the world will make a beaten path to his door."

Hasn't the whole world made a beaten path to the Mayo Clinic!

Any discussion on legal medicine would be incomplete, without a reference to the leading case of Staloch vs. Holm (100 Minn. 276). In that case the brief facts were these: The deceased, an apparently strong healthy man, twenty-one years of age, working with a steam outfit, stepped on the covering over the cylinder of a separator about to stop. A board slipped. His right foot went down in front of the revolving cylinder. The crew took him off the machine. A tooth or teeth of the cylinder had torn the flesh in the back part of the calf of his leg. Although the witnesses used different and inconsistent adjectives in describing the injury, it appears from their testimony and the circumstances that considerable flesh was mangled, crushed, and shredded; that the wound was large, lacerated, ragged, and oozing; that it was "ground full of chaff, dirt, and seeds"; and that bones and tissues were "gouged out." The young man was taken to a nearby house and the doctor immediately sent for. The doctor arrived; was at once able to tell that an operation would be necessary, but did not decide on it then. It was at least an hour, he says, before he commenced to actually operate. This he did, according to his testimony, a little before one o'clock and completed it before two, remaining for some hours afterwards, and administering stimulants. Shortly after he left the patient died. The evidence of plaintiff tended to show that the patient died of shock; the evidence of the defendant, that he died from the effect of a bubble of air, or fat, or of a clot of blood, which found its way to and stopped the action of the heart.

Action was brought to recover damages, and there was a jury verdict against the operating surgeon, which was reversed on appeal and the broad and wholesome doctrine forever established in our law of civil malpractice, that a physician is not liable for errors of judgment, and that honest judgment exercised in good faith is full protection to the physician of requisite skill, and this is particularly true in cases of emergency and doubt. The case has become so established in the books, that I quote briefly from it as follows: "The principles of law applicable to such a state of facts are clear and well-settled. In an ordinary action for negligence, that a man has acted according to his best judgment is no defense. The standard of careful conduct is not the opinion of the individual, but is the conduct of an ordinarily prudent man under the circumstances. In the leading case of Vaughn vs. Menlove, 3 Bing N. C. 468, 475, Tindall, C. J., said

that to hold otherwise 'would leave so vague a line as to afford no rule at all; the degree of judgment belonging to each individual being infinitely various.' With respect to matters resting upon pure theory, judgment, and opinion, however, there is a generally recognized variation from this sound general principle. The distinction between an error of judgment and negligence is not easily determined. It would seem, however, that if one, assuming a responsibility as an expert, possesses a knowledge of the facts and circumstances connected with the duty he is about to perform, and bringing to bear all his professional experience and skill, weighs those facts and circumstances, and decides upon a course of action which he faithfully attempts to carry out; then want of success, if due to such course of action, would be due to error of judgment, and not to negligence. But if he omits to inform himself as to the facts and circumstances, or does not possess the knowledge, experience, or skill which he professes, than a failure, if caused thereby, would be negligence." And again, "A physician entitled to practice his profession, possessing the requisite qualifications, and applying his skill and judgment with due care, is not ordinarily liable for damages consequent upon an honest mistake or an error of judgment in making a diagnosis, in prescribing treatment, or in determining upon an operation, where there is reasonable doubt as to the nature of the physical conditions involved or as to what should have been done, in accordance with recognized authority and good current practice" And as follows: "Another justification for the exception lies in the nature of the undertaking. Most professional men are retained or employed in order that they may give the benefit of their peculiar and individual judgment and skill. A lawyer, for example, does not contract to win a lawsuit, but to give his best opinion and ability. He has never been held to lability in damages for a failure to determine disputed questions of law in accordance with their final decision by courts of appeal. It would be just as unreasonable to hold a physician responsible for an honest error of judgment on so uncertain problems as are presented in surgery and medicine." And again, "Physicians and surgeons deal with progressive inductive science. On two historic occasions the greatest surgeons in our country met in conference to decide whether or not they should operate upon the person of a president of the United States. Their conclusion was the final human judgment. They were not responsible in law either human or divine for the ultimate decree of nature. The same tragedy is enacted in a less conspicuous way every day in every part of the country. The same principle of justice apply."

This case too laid down the rule that damaging admissions of a physician or surgeon, based on after acquired information, are inadmissible, the point being that the professional man is to be judged, not by after acquired things, but in the light of the attendant circumstances.

I would be unmindful of my duty in referring to this case before a body of medical men, if I did not make a particular reference to the writer of the decision, the late Justice Jaggard. He was a great friend of the medical man, who was right and true. He admired ability and character in the man of medical science. He was learned in and lectured on medical Jurisprudence. He held high the ideals and learnings of the profession, and to all such, was companion, helpmate, and friend. He communed with the best in work, play, books, men, and nature. The law of civil malpractice is safer, and sounder, because Justice Jaggard lived and wrought.

Another leading case is Martin vs. Courtney (87 Minn. 197). In that case the patient had received a crushing injury to the foot in a railroad accident. There had been partial operative relief, infection had set in, there was further operative relief, but the patient finally died of septicaemia. It was sought to hold the surgeon liable for civil malpractice on the testimony of a witness who pretended to describe the exuding pus, backed up by an expert opinion that the description of the pus indicated it was deleterious, and necessitated immediate operation. There was a jury verdict against the surgeon, but the Supreme Court held on review, that as against the record of the surgeon, the diagnosis of the lay witness of things which were medical, was insufficient to support the verdict. The importance of the case is that the law scrutinizes the findings of the lay witness, where those findings are impressed with things medical and scientific, and, if not wholly incompetent they must yield to the findings of the professional man. In a

recent malpractice case tried by the writer, there was spontaneous fracture of the radius in osteomyelitis. A lay witness, there being antecedent testimony of manipulation, volunteered the opinion that the bone was broken and therefore it must have been broken in the prior manipulation. The Court on the authority of the Courtney case held the lay witness, who, of course, was interested in the event of the litigation, incompetent to testify, in a case of acute osteomyelitis, that the bone was broken. The decision and principle are of course, just enough, but there is no harm in observing that, in the promulgation of the doctrine, the two professions, law and medicine, have not overlooked their own. Perhaps it is the constitutional principle of self definition!

The two professions being here mentioned together, and in connection therewith the question of malpractice, it is perhaps well enough for a lawyer to concede, apart from the merits of course, that malpractice cases will continue to be less against lawyers than physicians, as long as lawyers, the bench and bar, control the law and the courts! Be that however, as it may, it is a sound principle of government that the liability of each exists, following by analogy the words misfeasance, and malfeasance, not where there is misfeasance, mispractice, mistakes, or error of judgment only, but there must be malpractice, wrong doing, bad faith, or gross want of skill. The lawyer and physician, possessed of average skill, sell their judgment, but there is no warranty, express or implied.

It is well enough to note that the State Medical Association has successfully defended all the malpractice cases, including x-ray cases where there is prima-facie liability, brought against its members except two obstetrical cases, where the infants were greviously burned by coming in contact with an uncovered water bag, and an uncovered flat iron, which had been placed in the bed. The cases did not involve professional judgment, and the Court applied the doctrine of the sponge cases, and held the physician to the care of the patient, and of the child, even if others handled the water bag, flat iron, or other instrumentality that was damage feasant.

I have thus brought to your attention some legal aspects of medicine and surgery, particularly three, first the obligation of the law holding you to a standard, and perhaps an ever increasing standard of skill, second, the law protects you in the exercise of an honest though erroneous judgment, and third, the law protects you in your medical findings as against interference my lay witnesses.

In conclusion then, let us keep our professional ideals, and to our ownselves be true, and it must follow as the night, the day, we cannot than be false to any man. Speaking of ideals, it is well to remember that it was a physician, Dr. Oliver Wendell Holmes, who said in The Chambered Nautilus:

"Build the more stately mansions, oh my, soul,
As the swift seasons roll!
Leave thy low vaulted past!
Let each new temple,
Nobler than the last,
Shut thee from heaven,
With a dome more vast,
Till thou at length are free,
Leaving thine out grown shell,
By life's unresting sea!"

DESENSITIZATION IN SERUM THERAPY*

By Charles B. Drake,
St. Paul, Minn.

The use of serum in therapeutics has become so widespread that a consideration of the question of desensitization is of practical interest. As sensitization may be a very serious matter, it is desirable to know just what it is, where it is to be looked for and how it may be prevented.

Serum shows a wide range of primary toxicity, depending on many factors. The blood serum of one species shows a variable toxicity to other species. The serum of the eel, for instance, is very toxic to guinea pigs (4) while horse serum is practically non-toxic to the human species (2).

The horse develops a marked immunity upon repeated injection of the organisms which are the causative factors of several diseases afflicting human beings. The more common are diphtheria, epidemic meningitis, tetanus, dysentery, pneumonia and infections with the

*Read before the Ramsey County Medical Society, March 31, 1919.

streptococcus. Large quantities of serum can be obtained from the horse, so that these considerations have caused the horse to be used commercially for the source of serum. It should be distinctly understood that horse serum, in itself, is harmless even when given in large doses of 100 c. c. intravenously, and we have the statements of Von Pirquet and Rufus Cole (1) that they have never seen a fatal case of serum sickness, nor has Cole seen any unfavorable influence on the general condition of any of his pneumonia cases. The diptheria antitoxin itself contained in the serum has been proven to be perfectly harmless (2) and a similar deduction regarding the other antitoxins is justifiable. I wish to emphasize this point, because so often we encounter the statement from the laity, and also occasionally from members of the profession, that the large dose of antitoxin injured the heart.

In 1894, with the introduction of diphtheria antitoxin certain reactions following its subcutaneous injection were soon reported. The name serum sickness was applied to the condition, which was found to make its appearance at a variable time after the injection, usually eight to thirteen days. The symptoms, if they appeared, consisted of one or more of the following: urticaria, fever, malaise, pains in the points, swelling of the lymphatics, edema, and albuminuria. The manufacturers have succeeded in reducing the frequency and severity of this reaction by using the precipitated globulin content of the serum and by starving the horses for twenty-four hours preceding the bleeding, eliminating certain products of digestion in the blood.

Rather severe serum reactions have followed the intravenous administration of pneumonia serum in large doses, a method of treatment rapidly coming into vogue during the past four years. The reactions are quite variable. The patient (3) will often become quite restless during the injection. His face may become flushed, his eyes burn and his skin begin to itch. A bronchial irritation may start him coughing. His face may rapidly become crimson, his pulse generally is full and bounding. A perspiration is likely to appear, and a urticaria may appear even during the administration. A chill, more or less severe and lasting a few minutes, or longer, is quite likely to occur about a half hour following the treatment. The chill may be followed by a condition of mild shock in which the pulse becomes weak and the skin pale and moist. Reaction follows, and with it a temperature rise of a degree or two and the pulse becomes stronger and fuller. Relaxation then sets in and the temperature descends, usually, and may even become normal and stay there.

If, following an interval of eight to thirteen days or more a second injection of the same serum is given subcutaneously, intramuscularly or intravenously a more or less severe condition of shock may occur, the more severe form of which may rapidly prove fatal and is known as anaphylaxis. As Vaughn has shown, this term is a misnomer, as the Greek ana means without and plyloxia, protection. The term allergy, meaning altered reaction, is the better term.

The degree of shock depends on several factors. The smaller the initial dose within certain limits the more likely its occurrence. Experimentally, one millionth of a c.c. of horse serum was sufficient to sensitize a guinea pig (2). The larger the amount of the second injection the greater the shock, and the reaction is more severe in ascending degree in subcutaneous intramuscular and intravenous administration. The shock may occur in a minute or two during the intravenous administration, while it may be delayed ten or twenty minutes when the subcutaneous route is used.

Anaphylactic shock is the result of a repeated injection of the same protein, not necessarily serum, when a period known as that of incubation has intervened. The reaction is very definitely a specific one. Animal experimentation has shown this hypersusceptibility to persist for years. This persistence is not so prolonged in the human, as many of us know from practical experience.

The most widely accepted theoretical explanation of anaphylaxis or hypersusceptibility, though far from being satisfactory, is something as follows: A foreign protein coming into contact with the blood and certain cells of the organism causes the formation of anti-bodies. While the foreign protein may not act as a

poison, as is the case with horse serum in the human, it does produce anti-bodies during what is known as the period of incubation necessary for sensitization. When the same protein is again introduced a certain poison called anaphylatoxin is produced, the exact source of which has not been satisfactorily explained. Vaughn and Wheeler (3) have succeeded in breaking up the protein molecule by means of absolute alcohol and a dilute alkali into a poisonous and non-poisonous part, the former being apparently the same toxin in various proteins, while the latter shows specific immunity properties. It is possible that this toxin derived from the protein molecule in the anaphylatoxin and is liberated by the antibodies which have been formed during the period of incubation. The humeral and cellular theories attempt to explain the location of the anti-body, the former locating them in the serum of the body fluids, the latter in certain body cells. The location of the sensitized body cells may determine the location of the symptoms.

Gay and Southard (4) have described in autopsies following experimental anaphylaxis microscopic hemorrhages in 85 per cent of their cases. This occurred in the lungs, brain, spinal cord and peritoneum. Fatty degeneration was widespread in the capillaries, heart muscles, peripheral nerves, voluntary muscle and gastric epithelium. They concluded that the cause of death was a paralysis of the respiratory center.

Rosenau and Anderson (4), on the other hand did not conclude from their experiments that hemorrhages were typical of the condition; although they found congestion of the viscera and occasional hemorrhages. They failed to find fatty degeration.

Aver and Lewis (4) found the lungs distended and failing to collapse on section.

Experimental anaphylaxis has been repeatedly produced in guinea pigs. In five or ten minutes following the second injection rapid breathing sets in with coughing, and the animal becomes very agitated. Paralysis is followed by convulsions and death usually occurs within an hour, and frequently within thirty minutes.

In man the symptoms are much the same. A condition of shock with dyspnoea, rapid and weak pulse and suffusion of the face may be followed by convulsions and even death in the remarkably short periods of one or two minutes.

When a severe form of anaphylaxis occurs treatment is next to impossible. It is well to have a hypodermic of adrenalin mm 15 and atropine gr. 1-100 which may be combined in the same hypo ready for immediate injection when the suspicion of the possibility of even a mild serum hypersusceptibility exists. These drugs often act in the milder reactions like specifics. Adrenalin often miraculously controls the many times distressing urticaria when given hypodermically in 3 minim doses.

Guinea pig experiments have shown the possibility and practicability of desensitization. If a guinea pig is injected intravenously with .01 c.c. of horse serum and in ten days a sublethal dose is given, they may be followed by a large dose immediately and no symptoms will develop (5).

Applied to man Besredka has shown that by giving extremely small doses and repeating them frequently and in increasingly larger doses the individual can be desensitized. One author (6) makes it a practice preceding large initial serum doses intravenously to give .5 c.c. subcutaneously or intravenously, in thirty minutes 1 c.c. in another thirty minutes 2 c.c., and in still another thirty minutes 4 c.c., laying emphasis on the necessity of giving the last two doses intravenously. The patient must feel like St. Sebastian whose picture showng him piereed by many arrows is so often seen in the art galleries. Other writers suggest the simpler method of giving .5 to 1 c.c. of any horse serum some four or five hours before it is given intravenously (7). (Otto and Hoeffer.)

In a rather concentrated experience with both diphtheria and pneumonia serum in a military base hospital during the past year I used routinely a modification of the described methods of desensitization. On admission to both the diphtheria and pneumonia ward every patient was given a minim of serum intradermally producing a small bleb as in the Shick test. The skin reaction at the end of two, twenty-four and forty-eight hours was observed. A history of previous serum administration, asthma, a sensitiveness to horses or a marked inflammatory reaction about the skin test was followed by a subcutaneous in-

jection of 1 c.c. of serum. In four to six hours we felt safe in proceeding with as large doses of serum as we deemed necessary. The type (I) pneumonia cases were always given the subcutaneous desensitization dose several hours before giving the large dose intravenously. Care was exercised to inject the serum very slowly at first in both the intravenous pneumonia injections and the intramuscular diphtheria injections.

Notwithstanding references in the literature to anaphylaxis as a bug-a-boo, I am personally convinced that fatal cases do occur. It seems likely too that with the marked increase in the use of single serum injections for a continually increasing variety of conditions we are likely to encounter anaphylaxis, or at least a hypersusceptibility more often than formerly. We know, too, that anaphylaxis is likely to be more severe when the intravenous route is used. This is no contraindication to the practice of serum therapy, but care should be exercised to desensitize when a case is at all suspicious.

The death of a child following a proplylactic subcutaneous injection of 1000 units of diphtheria antitoxin was reported in one of the State Medical Journals last year (8). Convulsions and death followed in about twenty minutes. At autopsy the lungs were found inflated and emphysematous and the lymphatics were generally enlarged. The intestines contained bile-stained mucus and the thymus was enlarged. This closely resembles the findings in anaphylaxis.

A few days before my arrival at my first military station a fatal case of anaphylaxis occurred during the first few minutes of an intravenous administration of anti strepococic serum. The patient had received serum some three weeks previous. Another case at the same hospital while I was there showed marked symptoms of hypersusceptibility by convulsions and cardiac disturbance a few minutes after a very few drops of diphtheria antitoxin had been given subcutaneously.

Another phase (5) of protein hypersusceptibility can only be touched upon here. This includes the diseases of bronchial asthma, hay fever, angioneurotic edema, and gastro enteritis and a class not definitely decided comprising eczema of infancy, certain chronic arthropathies and epilepsy.

Then too, there are the food and drug idiosyncracies. A beginning is just being made in the exploration of this field and as regards desensitization here we know nothing.

Experiments go to show that protein sensitization is an acquired characteristic which is acutally handed down (2) to the next generation. This may account for its presence when a history of the sensitizing inoculation is missing.

Certain animals may be sensitized to protein through the alimentary canal. No proof that this occurs or does not occur in man has to my knowledge been presented.

I cannot refrain from calling your attention to the marked analogy between protein sensitization and several of the infectious diseases. The incubation period is identical in each case. At the end of this period an eruption appears. It seems most reasonable to suppose that the symptoms of measles, rubella, scarlet, and maybe other exanthemata are the expression of the reaction of anti-bodies and some foreign protein, bacterial or otherwise.

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R. E. Farr, M. D. Minneapolis
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H. Longstreet Taylor, M. D. St. Paul
J. E. Hynes, M. D. Minneapolis
J. T. Christison, M. D., St. Paul

EDITORIAL OFFICE: LOWRY BLDG., SAINT PAUL

BUSINESS MANAGER
J. R. Bruce, 403 Central Bank Bldg., Saint Paul
Telephone: N. W. Cedar 1683

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EDITORIAL

THE DISCHARGED SOLDIER

The physician frequently is visited by a man who has been in th service of his country and who needs medical attention. More likely than not this visit opens up a very real opportunity for the physician to do a definite service for the quondam soldier and show a fine quality of patriotism in the form of good advice.

If the man's trouble is not associated with his military service the physician will expedite matters by giving the necessary medical attention at once. If the present physical derangement is the result of or was aggravated by the man's military experience, the physician should inform the patient that he is entitled to government examination, advice and treatment by specialists if required, all without expense of any kind to him. The Government will pay railroad expense necessary to reach the particular government medical center for examination alone. Expenses for board and lodging, hospitalization and even the cost of providing a substitute at his place of business can all be received by sending in to Washington an itemized list with receipts of the money spent. This should all be explained in such a way that the potential patient would feel perfectly free to choose not to be one to his advisor. We all know it is often how a thing is said, rather than what is said.

The Government wants every man who has given his services to his country to feel that his Uncle Sam is his friend and not like his "Deutscher Onkle". The Government is striving to give every soldier and discharged soldier a square deal. As this has to be done by the passing of laws and the sending of decisions and on an enormous scale, delays are necessary and sometimes unnecessary.

Recently a bill presented to the House by Mr. Raegburn of Texas and endorsed by the Bureau of War Risk Insurance offers great promise of radical betterment of certain compensation regulations. If passed and we have Colonel Roosevelt's statement that he believes it will be, disability will be estimated on a percentage basis of one hundred dollars a month instead of thirty as at present. The man who has lost his leg or arm will receive a certain per cent of $100 and the man with both arms gone will get the full hundred. The man with double total disability of whom there is at present, thank God, but one and he with both arms gone and both eyes blinded will be entitled to two hundred a month from the compensation feature and fifty seven dollars and fifty cents from his insurance. This increase to care for the increased cost of living is only square treatment to the man who suffered physically for his country and is the least that can be done.

To provide against future want on the part of dependents the scheme of War Risk Insurance was devised. What with allottments, insurance, laundry, liberty loan and spending money, the American soldier, altho the best paid in the world did not save much during his service. The sixty dollar bonus was not sufficient to cary many over the transition period upon return to civilian life particularly injured or sick. The larger per cent of insurance was allowed to lapse. Provisions allowed the reinstatement of the insured upon payment of the premiums in arrears.

On July 15, 1919 a decision by Secretary of the Treasury, Carter Glass, makes reinstatement within eighteen months possible by the payment of only two months War Risk Insurance. As the applicant was not covered during the lapsed time, it was rightly considered unjust that he should have to pay for some-

thing he did not receive. The premium for the two months pays for the month of grace during which he was covered when his insurance lapsed and for the first month of reinstatement.

In order to become reinstated the applicant simply has to write to the Bureau of War Risk Insurance Division, Washington, D. C., stating the following:

The amount of insurance to be reinstated and the name of each beneficiary.

The full name (front, middle and last) of the applicant with his complete address.

The rank at time of applying for insurance.

The army serial number, if formerly in the army.

The number of the insurance policy certificate if known.

The applicant must state that he is in as good physical condition as he was when his policy lapsed.

A check, draft or money order payable to the Treasury of the United States for two months premiums for the amount desired reinstated should accompany this information.

This insurance can be converted without medical examination any time within five years to one of the so called line policy bearing no restrictions as to occupation or where the insured desirous to travel and with a total disability clause payable to any age. The converted policy is considerably cheaper than insurance obtainable in any other reliable company and is an additional consideration to the man who has rendered his services to his country.

The disadvantages are these incident merely to the establishment of a new business of enormous properties and carried on at long distance.

SOLVING THE PROBLEM OF A STATIONARY POPULATION

The importance of prenatal care in France is appreciated by all conversant with the fact that for years prior to the war the population of the country was numerically stationary. During the war, the death rate far exceeded the birth-rate. Recognizing these facts, prenatal care was established in France by Doctor F. L. Adair, associate professor of Obstetrics and Gynecology in the University of Minnesota, Minneapolis, Minn., under the auspices of the American Red Cross Children's Bureau.

The work has been developed since January 1st of this year by Doctor Adair, who had charge of the Maternal Welfare work of the Children's Bureau until his recent return to the States. It will be continued by the French authorities at the school of Puericulture of Child Welfare established by the bureau in connection with the Medical College of Paris. An investigation of prenatal care was first conducted by Doctor William Palmer Lucas in September, 1918, but the push at the front created a war emergency which prevented the establishment of the department at that time. After the signing of the armistice, it was possible to begin the work so greatly needed by the people and activities were opened in the fourteenth and ninteenth arrondissements. A little later, at the Dispensary of Bicetre, clinics for nurslings and children were being conducted by the Red Cross Children's Bureau. The purpose of this bureau was to get in touch with as many prospective mothers as possible and to give them all the medical and social aid in its power.

In the fourteenth arrondissement, the nursing and visiting work was done by French women under the direction of Miss Nellie Reed of Washington, D. C., of the American Red Cross. During the first six months, about 200 pregnant women were cared for in these prenatal clinics in the arrondissements.

Nearly as important as the medical attendance was the social work among the pregnant women. In all hospitals and consultations of two arrondissements, a program of social service was conducted. At the consultations, the inquiries were made as to the needs of the patients, whether the women knew how, or were able to carry out the doctor's prescriptions; knew how to prepare for the needs of herself and child; and individual cases were followed up to see if they attended the consultations as often as necessary. If the women were in need of assistance, it was given them.

Visitors went into the wards of the maternity hospitals to keep in contact with the accouchees and give them the social help they

needed with a view of assisting them to adapt themselves to their new problems. Talks upon how a pregnant woman should dress, how to prepare a layette, practical demonstrations of care to be given the new-born baby, in personal hygiene and improvements in the hygiene of the home were given. Through these activities over 500 prospective mothers were interviewed and advised how best to meet their new problems. This work was only conducted during two months and was eminently successful.

It is too soon to predict any result of the work, but the mothers respond most cordially and are anxious to profit by the advice given them by the American Red Cross workers. In many cases, letters of thanks and calls from the husband will express the appreciation of the safe delivery of the child.

In the short time during which the work was established in two sections, with a population of about 600,000 persons, about 500 cases were cared for in the consultations in both a medical and social way.

The success of the prenatal work of the American Red Cross under Dr. Adair has led to its permanent establishment. In Bicetre, the work will be continued by the municipality. In the fourteenth arrondissement, the Patronage Franco-American in close connection with the Mairie has arranged for its continuance and an "ouvre" was formed in the nineteenth arrondissement to carry on the whole plan of work.

It is realized by all who have studied the subject that there is no more important welfare work in France than that dealing with maternity and its effect on the increase of population, so vital to the future of France.

A NEW COVER

Times and styles change and so with the medical magazine. While the true value of a magazine lies within the covers, we believe the change of cover which appears for the first time on this issue a distinct step in the right direction. To give honor where honor is due the change was instigated by the Rochester member of the Editing and Publishing Committee.

In Grecian days a statue must be perfect when seen from the rear as when seen from the front for the reason that the Gods could look around the statue. It will be the effort to construct Minnesota Medicine so that the present day critics will find no flaws as they look not merely on front and back cover but thru the work of art.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

MINNESOTA STATE MEDICAL ASSOCIATION

The annual meeting of the Minnesota State Medical Association, will be held in Minneapolis, October 1st, 2nd and 3rd. It is very desirable that every member of the association who possibly can, be present at the meeting.

The House of Delegates will hold its first session in the Library rooms of the Hennepin County Medical Society, at 2:00 P. M. Wednesday, October 1st. A joint session of all the members will occur at the Gold Room, Hotel Radisson, Thursday morning at nine o'clock. This meeting will be addressed by Mayor J. E. Meyers of Minneapolis. Immediately following the Surgical Section will convene in the Gold Room for its first scientific session and the Medical Section will meet at 9:45 in the Library rooms of the Hennepin County Medical Society in the Donaldson Building.

Following the usual custom, there will be four scientific sessions, the Medical and Surgical Sections meeting in the places indicated above.

Friday afternoon there will be a joint session in the Gold Room at which time the President will deliver his address, and this will be followed by group papers on subjects of great interest.

The annual banquet will occur Thursday night, and at that time, the members will have opportunity of hearing Governor J. A. A. Burnquist and President M. L. Burton, and Dr. W. W. Herrick Associate Professor of Medicine, Columbia University.

Programs of exceptional interest have been arranged for both the Medical and Surgical sections. Clinics will be held Wednesday and Saturday mornings in Minneapolis, but will in no way interfere with the scientific discussions of the regular program. The complete program will be mailed you within a short time.

The Women's Auxiliary of the Hennepin County Medical Society are arranging for the entertainment of all visiting ladies.

It is earnestly hoped that you will arrange to be present at all these meetings.

NEW YORK AND NEW ENGLAND ASSOCIATION OF RAILWAY SURGEONS

The twenty-eighth annual session of the New York and New England Association of Railway Surgeons will be held at the Hotel McAlpin, New York City, on Monday, October 20th, 1919. A very interesting and attractive program has been arranged. A symposium on "The Modern Treatment of Infected Wounds" will be presented by leading surgeons. Railway surgeons, attorneys and officials and all members of the medical profession are cordially invited to attend.

Dr. J. S. Hill, President, Bellows Falls, Vt.

Dr. George Chaffee, Corresponding Secretary, Binghamton, N. Y

OBITUARY

DR. GEORGE S. BRIGHAM

Dr. George S. Brigham of St. Cloud died on August 30th, 1919. Dr. Brigham was born in Bakersfield, Vermont, on June 16, 1845. He graduated from the McGill University, Montreal, Canada in 1871. He started to practice medicine in Sheldon, Vermont and after remaining there for three or four years he moved to Austin, Minnesota. He remained at Austin until 1878 and then moved to St. Cloud where he has made his home since. He is survived by his widow and three children.

DR. WILLIAM BURKE

Dr. William Burke was killed in an automobile accident on August 17th. Dr. Burke was born in Chatfield, Minn. in 1889. He graduated from the Chatfield High School and from St. Thomas College in 1910. He studied medicine at the St. Louis University and graduated in 1915. After spending a year as interne at the St. Louis Hospital, he located at Preston where he was associated with Dr. Grinnell for a year. In January, 1918 he located at Wykoff where he practiced until his death. His parents survive him.

DR. GEORGE R. CURRAN

Dr. George R. Curran died at his home in Mankato, September 1. The immediate cause of his death was dropsy and heart trouble. He was born at Cannon Falls, Minn., July 1, 1863, receiving his early education in the country schools of Minnesota, following which he attended the Hastings High School. He graduated from the Carleton College in 1887 and then entered the medical department of the University of Michigan from which he graduated in 1892. He at once began to practice at Worthington, Minn. where he remained for nine years. Dr. Curran then spent a year in Europe taking post graduate work. Upon his return he located at Mankato where he practiced until last June at which time he was obliged to give up practicing on account of ill health. Dr. Curran was a member of the Blue Earth County Medical Society, Minnesota State Medical Association, Southern Minnesota Medical Association, Southwestern Medical Society and the American Medical Association. Dr. Curran's widow and one daughter survive him.

DR. J. F. MULHOLLAND

Dr. John F. Mulholland died at the home of friends in Jordan on August 24th. He was born at Pawtucket, Mass. on February 22, 1849. He graduated from Rush Medical College and began to practice at Centerville, Wis., later at New Richland, Minn., and in 1879 came to Jordan where he practiced for sixteen years. He then took up the speciality of eye, ear, nose and throat diseases and practiced for several years in Manitowoc, Kenosha and St. Paul. He returned to Jordan five years ago. Three brothers and two sisters survive him.

CORRESPONDENCE

Paris le 14 Mai, 1919.

114 Boulevard St. Germain.

Dear Sir,

I am sending you the copy of a note that has been published in February at the French Scientific Academy.

I am sending you this, so that you may in publishing it in your paper give your compatriotes an opportunity of treating the terrible calamity (influenza). About 500 patients have been successfully treated by myself with antipest serum.

Doctors in Paris, and in the country have employed this treatment with the greatest success. This mode of non specific serotherapy may seem very strange, but we must remember that the serum of the Pasteurellose of the porc (Chambellan et Jouhau) protects also against the other Pasteurelloses.

I started from that idea when I used antipest serum.

I shall send you later on:

1. The cultural characters of the micro organism, isolated in the blood of almost all the patients I have treated.

2. A certain number of observations of very abnormal cases which had caused mistakes in the diagnostic.

I will give you all the complementary informations that you may need and believe me, dear sir.

Yours truly,

E. Polley.

P. S. This note has been published in the Lancet No. 4990, April 19, page 656. Included you will find also cuttings of French papers.

OF GENERAL INTEREST

Dr. W. E. Richardson, Slayton, has moved to Pipestone.

Dr. M. C. Piper formerly of Sanborn has located at Rochester.

Dr. S. R. Fraker of Cass Lake will move to Cedar Rapids, Iowa.

Dr. M. B. Ruud of Alexandria has removed to Grand Forks, N. D.

Dr. O. E. Stewart of Bricelyn has been promoted to the rank of Major.

Dr. Leon G. Smith formerly of Ellsworth, Wis. has located at Montevideo.

Dr. O. N. Meland has returned from overseas service and has located at Warren.

Dr. F. B. Mach of Minneapolis is still stationed at Brest, France, on hospital duty.

Dr. R. H. Wald has returned from France and will resume his practice at Hastings.

Dr. L. W. Barry announces the opening of his office at 544 Lowry Bldg., St. Paul.

Dr. Selmer Gausemel recently returned from the army and will locate in Kenyon.

Dr. W. F. Bleisfuss will leave Elgin to take up Public Health work at Rochester.

Dr. J. D. Geissinger announces the opening of his office at 544 Lowry Bldg., St. Paul.

Dr. P. C. Pillon has returned to Paynesville after serving for ten months in France.

Dr. G. L. Baker of Moorhead will move to Rochester where he will join the Mayo Clinic.

Dr. L. M. Boyd of Alexandria has returned from service and will resume his practice.

Dr. Fred Franchere, who has been in service has resumed his practice at Lake Crystal.

Dr. G. T. Haugen has sold his practice in Battle Lake to Dr. W. S. Broker of St. Paul.

Dr. M. J. Shaughnessy will leave Wabasha for Framimham, Mass., about October 1st.

Dr. P. L. Berge will again locate in Brainerd after serving in the medical corps of the army.

Dr. I. J. Murphy announces the opening of his office at 506 Donaldson Bldg., Minneapolis.

Dr. W. A. Meierding has received his honorable discharge and will again locate at Springfield.

Dr. M. C. Welch has returned from France and has opened his offices at 821 Lowry Bldg., St. Paul.

Dr. C. A. Lindberg has given up his practice at North Branch and will go to Washington, D. C.

Dr. Stanley Robert Maxeiner, Minneapolis has been appointed Major in the Medical Reserve Corps.

Dr. A. F. Strickler, Sleepy Eye, has discontinued the practice of medicine and gone into business.

Dr. L. M. Keene has returned from service in the army and will resume his practice at Alexandria.

Dr. Harry Clark formerly of Clear Lake will locate at St. Cloud. Dr. Clark recently returned from France.

Dr. Cora Allen returned to Heron Lake after having served a year with the American Red Cross in France.

Dr. G. T. Nordin has returned from France and has opened offices at Lake Street and Chicago Ave., Minneapolis.

Dr. D. F. McCann has returned from services in the army and has again associated with Dr. Gilmore of Bemidji.

Dr. Alexander Archibald has returned to Rochester after having served with the Canadian medical forces since July, 1917.

Dr. C. R. Sanborn has opened offices in the Miles Block, Bemidji, resuming his practice after having served in the army.

Dr. W. D. Beadie, St. Paul, has moved to Cannon Falls, where he will have charge of the Mineral Springs Sanitarium.

There is an opening for a physician at Erwin, South Dakota. Communicate with Druggist F. L. Shannon of Erwin.

Dr. A. M. Kendahl of Jasper will take a post graduate course in the Chicago hospitals and will return in about two months.

Dr. J. F. Corbett announces that he has returned to civil practice of surgery at 808 Physicians and Surgeons Bldg., Minneapolis.

Dr. A. A. Peterson, a graduate of the Northwestern University of Chicago has entered partnership with Dr. J. E. Rheim of Mora.

Dr. and Mrs. C. M. Roan of Minneapolis have sailed on a visit in the Scandinavian countries. They will return about November 1st.

Dr. Merritt W. Wheeler who has served with the medical corps in France has returned and resumed his practice at Hutchinson.

Dr. H. J. Thornby has sold his practice at Barnesville and will locate at Moorhead and become associated with Dr. V. E. Verne.

Dr. Walter Scarborough will form a partnership with Dr. A. M. Kendahl of Jasper. Dr. Scarborough formerly practiced in Chicago.

Dr. M. A. Desmond who has been stationed at Fort Snelling has returned to Glenwood. The doctor will move very soon to Washington.

Miss Emma Potter, R. N., who served in the Red Cross Service overseas has been appointed school nurse for the New Ulm schools.

Miss Mary Fraser, 4331 Fremont Ave. So., Minneapolis would like a position as a Technician with a group of doctors or in an institution. Miss Fraser is a graduate from the University of Minnesota in

1913 and for the last year has worked in a French Hospital.

Dr. J. F. Hammond has opened offices at 642 Lowry Bldg., St. Paul. Dr. Hammond has served with the British forces since March, 1915.

Dr. J. H. Drake formerly of Hardlin, Montana, will locate at Baudette. Dr. Drake recently received his honorable discharge from the army.

Dr. John A. Lepak announces the opening of his office at 544 Lowry Bldg., St. Paul. Dr. Lepak will limit his practice to internal medicine.

Dr. Alexandria Josewich, 707 Physicians and Surgeons Building, Minneapolis has returned from Camp Bowie where he was detailed for the last two years with the base hospital.

Dr. E. A. Meyerding returned to St. Paul after having served twenty-seven months in the army. Dr. Meyerding will resume his position as director of the division of school hygiene.

Dr. Fred L. Adair has returned to Minneapolis from overseas where he spent a year in the service of the American Red Cross, being detailed to work with the French commission.

Dr. William J. Cochrane formerly of Lake City, announces the opening of his offices at 609 La Salle Bldg., Minneapolis. His practice will be limited to diseases of the eye, ear, nose and throat.

Dr. W. R. Hand of Elbow Lake knows of several good locations for physicians in North Dakota; he will assist in the location of good men there without expense to them from a purchase standpoint.

Dr. George E. McGeary, formerly City Physician of Minneapolis and at one time Acting Superintendent of the Minneapolis City Hospital, has moved to Browns Valley where he will have charge of the hospital.

New Ulm has three members of the medical profession on the Board of Education viz., Dr. Geo. B. Weiser, President, who has served in that capacity continuously for twenty years, Dr. Jos. H. Vogel and Dr. G. F. Reineke.

Dr. Frank W. MacKoy has resigned as Medical Director of the Mudbaden Sanitarium, Jordan, Minn., to return to his former position as head of the department of metabolic diseases, Sacred Heart Sanitarium, Milwaukee, Wis.

Dr. O. C. Strickler gave a dinner to the medical profession of New Ulm in honor of Major O. J. Seifert, who recently returned from overseas service in France. Dr. Seifert had charge of Ambulance Train No. 58. He has resumed his practice in New Ulm.

Dr. Gates of the Rockefeller foundation, who had been working particularly with the epidemic cerebrospinal meningitis problem, gave a talk to the St. Mary's hospital staff Duluth the evening of September 4th. Dr. Gates was in close touch with the meningitis situation in our camps during the war period. His recent work in the Rockefeller Institute in standardizing antimeningococcus serum has been of enormous benefit to the profession at large. It is another evidence of the great good coming out of the Rockefeller foundation.

St. Mary's hospital in Duluth reports the organization of a staff. This has been accomplished by the invitation to join the staff of the men who were doing the major part of their work in St. Mary's hospital. Monthly meetings are held, and a strict effort is being made to conform to the directions and wishes of the American College of Surgeons in the matter of the keeping of hospital records, card indices, follow up systems, etc. It is not the intention of these staff meetings to encroach upon the regular province of the County Society, but rather to keep all the men working in connection with the hospital in touch with the work that is being done, with particular emphasis upon a discussion of the pathological data accumulated, the interesting developments in the Roentgen department, and to harmonize the interests and purposes of the hospital and the attending physicians.

NEW AND NON-OFFICIAL REMEDIES

During August the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion with New and Nonofficial Remedies:

Calco Chemical Co.:
- **Cinchophen-Calco.**

Geck Laboratory:
- **CULTURE-LAC.**

Eli Lilly and Co.:
- **Tetanus Antitoxin-Lilly.**

Fred I. Lackenbach:
- **B. Coli Bacterin (Spec. Bact. Vac. No. 12)**
- **Gonocccus Bacterin (Spec. Bact. Vac. No. 9)**
- **Staph-Acne Bacterin (Spec. Bact. Bac. No. 6)**
- **Whooping Cough Bacterin (Spec. Bact. Vac. No. 14)**
- **Staphylococcus Bacterin (Spec. Bact. Vac. No. 1)**
- **Streptococcus Bacterin (Spec. Bact. Vac. No. 10)**
- **Typhoid Bacterin (Spec. Bact. Vac. No. 17)**
- **Typhoid-Paratyphoid Bacterin (Spec. Bact. Vac. No. 13)**

Barbital Sodium—Abbott.—A brand of barbital sodium which complies with the New and Nonofficial Remedies standards. Barbital sodium is the soluble sodium salt of barbital (veronal). Barbital sodium was first introduced as veronal sodium and medinal. For a discussion of the actions, uses and dosage of barbital sodium see New and Nonofficial Remedies, 1919, p. 83. The Abbott Laboratories, Chicago.

Ovarian Substance—Hollister-Wilson—The entire fresh ovary (including the corpora lutea) of the hog,

cleaned, freed from fat, dried and powdered. It contains no diluent or preservative. For a discussion of the actions and uses of ovary preparations, see New and Nonofficial Remedies, 1919, p. 202. The dose is from 0.06 to 0.2 Gm. (1 to 3 grains). The Hollister-Wilson Laboratories, Chicago.

Desiccated Corpus Luteum—Hollister-Wilson.—The fresh substance from the corpora lutea of the hog, dried, freed from fat and powdered. It contains no diluent or preservative. For a discussion of ovary preparations, see New and Nonofficial Remedies, 1919, p. 202. The dose is from 0.03 to 0.12 Gm. (½ to 2 grains). Hollister-Wilson Laboratories, Chicago.

Sodium Dioxide, Dental—R. and H.—A brand of sodium peroxide complying with the New and Nonofficial Remedies standards, but containing at least 90 per cent of sodium peroxide, and iron not to exceed 0.006 per cent. For a discussion of the actions and uses of sodium peroxide, see New and Nonofficial Remedies, 1919, p. 216. Roessler and Hasslacher Chemical Co., New York (Jour. A. M. A., Aug. 23, 1919, p. 607).

B. Coli Bacterin (Special Bacterial Vaccine No. 12.)—A colon bacillus vaccine (see New and Nonofficial Remedies, 1919, p. 283), marketed in 10-Cc. vials, each cubic centimeter containing 5,000 million killed Bacillus coli. Fred I. Lackenbach, San Francisco.

Gonococcus Bacterin (Special Bacterial Vaccine No. 9).—A gonococcus vaccine (see New and Nonofficial Remedies, 1919, p. 285), marketed in 10-Cc. vials, each cubic centimeter containing 1,000 million killed Gonococcus. Fred I. Lackenbach, San Francisco.

Staph-Acne Bacterin (Special Bacterial Vaccine No. 6).—A mixed bacterial vaccine (see New and Nonofficial Remedies, 1919, p. 296), marketed in 10-Cc. vials, each cubic centimeter containing 500 million killed Staphylococcus albus, 500 million killed Staphylococcus aureus, and 50 million killed Bacillus acne. Fred I. Lackenbach, San Francisco.

Whooping Cough Bacterin (Special Bacterial Vaccine No. 14).—A pertussis bacillus vaccine (see New and Nonofficial Remedies, 1919, p. 287), marketed in 10-Cc. vials, each cubic centimeter containing 2,000 million killed B. Pertussis. Fred I. Lackenbach, San Francisco.

Staphylococcus Bacterin (Special Bacterial Vaccine No. 1).—A staphylococcus vaccine (see New and Nonofficial Remedies, 1919, p. 289), marketed in 10-Cc. vials, each cubic centimeter containing 2,000 million killed Staphylococcus albus, 2,000 million killed Staphylicoccus aureus, and 1,000 million killed Staphylococcus citreus. Fred I. Lackenbach, San Francisco.

Streptococcus Bacterin (Special Bacterial Vaccine No. 10).—A streptococcus vaccine (see New and Nonofficial Remedies, 1919, p. 291), marketed in 10-Cc. vials, each cubic centimeter containing 1,000 million killed Streptococcus. Fred I. Lackenbach, San Francisco.

Typhoid Bacterin (Special Bacterial Vaccine No. 17).—A typhoid vaccine (see New and Nonofficial Remedies, 1919, p. 292), marketed in 10-Cc. vials, each cubic centimeter containing 1,000 million killed B. Typhosus. Fred I. Lackenbach, San Francisco.

Typhoid-Paratyphoid Bacterin (Special Bacterial Vaccine No. 13).—A typhoid vaccine (see New and Nonofficial Remedies, 1919, p. 292), marketed in 10-Cc. vials, each cubic centimeter containing 1,000 million killed B. Typhosus, 750 million killed B. Paratyphosus "A", and 750 million killed B. Paratyphosus "B". Fred I. Lackenbach, San Francisco.

Tetanus Antitoxin—For Human Use: Purified, Concentrated (Globulin).—A concentrated tetanus antitoxin (see New and Nonofficial Remedies, 1919, p. 266), marketed in syringes containing 1,500 and 5,000 units; in ampules containing 10,000 units, with apparatus for injection. Eli Lilly and Co., Indianapolis, Ind. (Jour. A. M. A., Aug. 30, 1919, p. 691).

PROPAGANDA FOR REFORM

Arsenoven S. S. and Solution of Arsenic and Mercury not Accepted.—The Council on Pharmacy and Chemistry reports that Arsenoven S. S., sold by the S. S. Products Co., Philadelphia, and Solution of Arsenic and Mercury (formerly called Arseno-Meth-Hyd) of the New York Intravenous Laboratory, New York, are inadmissible to New and Nonofficial Remedies because unwarranted therapeutic claims are made for them and because the names are not descriptive of the composition of these preparations. Arsenoven S. S. is claimed to contain dimethylarsenin 15.4 grains, mercury biniodid 1/10 grain, sodium iodid ½ grain. Dimethylarsenin is asserted to be similar to sodium cacodylate, but with a more pronounced therapeutic action. Solution of Arsenic and Mercury comes in three dosages, 2 gm., 1.5 gm., and 0.7 gm., respectively. The 2 gm. form is claimed to contain 2 gm. (31 grains) of sodium dimethylarsenate (cacodylate), U. S. P., and mercury iodid 5 mg. (1/12 grain) in 5 c. c. of solution. Both preparations are advised for the treatment of syphilis, intravenously. The report of the Council reminds physicians that cacodylates have been found inefficient as spirocheticides and warns against the abuses—often dangerous—to which patients are frequently subjected when "intravenous therapy" is employed (Jour. A. M. A. Aug. 2, 1919, p. 353).

Hormotone and Hormotone Without Post-Pituitary—The Council on Pharmacy and Chemistry reports that Hormotone of the G. W. Carnick Company is advertised as "A pluriglandular tonic for asthenic conditions." The same firm also advertises Hormotone Without Post-Pituitary for use "in neurasthenic conditions associated with high blood pressure." These preparations are sold in the form of tablets for oral administration. Each tablet of Hormotone

is said to contain 1-10 grain desiccated thyroid and 1-20 grain of entire pituitary together with the hormones of the ovary and testes—the amounts and the form in which the latter are supposed to be present are not given. From this it is seen that the only definite information given the medical profession regarding the composition of Hormotone is that it is a weak thyroid and a still weaker pituitary preparation. Hormotone without Post-Pituitary is said to contain in each tablet 1-10 grain desiccated thyroid, and to "prevent" "hormone bearing extracts of thyroid, anterior pituitary, ovary, and testes." The Council declared these preparations inadmissible to New and Nonofficial Remedies, because: (1) Their composition is semisecret. (2) The therapeutic claims are unwarranted. (3) They are sold under names not descriptive of their composition, but suggestive of their indiscriminate use as "tonics". (4) In the light of our present knowledge, the routine administration of pluriglandular mixtures is irrational (Jour. A. M. A., Aug. 16, 1919, p. 549).

Bromide and Acetanilid Compound.—The period of acceptance having expired for Granular Effervescent Bromide and Acetanilid Compound-Mulford, the Council on Pharmacy and Chemistry directed its omission from New and Nonofficial Remedies because an examination of the available evidence demonstrated that mixtures of this kind are inimical to rational medicine and the public. The use of mixtures of bromide and acetanilid in fixed proportions is irrational and prone to induce their indiscriminate use by the public—and this despite the perfectly frank declaration of the composition of this mixture by the manufacturer (Rep. Coun. Pharm. Chem. 1918, p. 58).

Holadin and Bile Salt Mixtures.—The period of acceptance having expired, the Council on Pharmacy and Chemistry decided to omit the following mixtures from New and Nonofficial Remedies: Holadin and Bile Salts-Fairchild, Capsules of Bile Salts, Succinate of Soda and Phenolphthalein-Fairchild, Capsules of Holadin, Bile Salts and Phenolphthalein-Fairchild; Capsules of Holadin, Succinate of Soda and Bile Salts-Fairchild. The Council holds that these mixtures are superfluous and that the several substances of which they are composed should be used singly, or at most with greater attention to the individual requirements of the patient than is possible when these fixed mixtures are prescribed. Despite that these mixtures have been in use for more than nine years, there is no satisfactory evidence that they possess any advantage over the simple laxatives, or the preparations of bile or pancreatic extract. The dismissal of the holadin and bile salt mixtures does not involve the question of the usefulness of holadin or of bile salts alone. On the contrary, the possible usefulness of these preparations is admitted and they are retained in New and Nonofficial Remedies. It is the combination of holadin, bile salts, sodium succinate and phenolphthalein to which objection is made by the Council (Rep. Coun. Pharm. Chem., 1918, p. 59).

Pollen Antigen.—Pollen antigen-Lederle is a pollen extract which represents the pollen of plants blooming in spring and in fall. The Council on Pharmacy and Chemistry declared these preparations inadmissible to New and Nonofficial Remedies because there appeared no warrant for complex pollen preparations representing both spring and fall pollens. In consideration of the essentially experimental status of the use of pollen preparations for the prevention and treatment of "hay-fever," such products should be as simple as possible. Hence pollen protein preparations prepared from the pollen of two or more species of plants are accepted for New and Nonofficial Remedies only if there is evidence that the given combination is rational (Rep. Coun. Pharm. Chem., 1918, p. 65).

Restoria.—"Restoria for Bad Blood" is sold by the Restoria Chemical Company of Kansas City, Mo. It is sold as a sure cure for syphilis, but is also recommended for rheumatism, kidney trouble, lumbago, eczema and catarrh. The A. M. A. Chemical Laboratory reports that Restoria contains no mercury or arsenic but does contain iodid, probably as potassium iodid, equivalent to 1.693 gm. per hundred Ccc. It also was found to contain much vegetable extractive, some alkaloidal drug and a bitter oil or oleoresin (Jour. A. M. A., Aug. 9, 1919, p. 438).

Cinchophen: Formerly Atophan.—The Chemical Foundation, Inc., which has purchased some 4,500 German-owned patents, many of them for synthetic drugs, proposes to continue the wise policy of the Federal Trade Commission by requiring that those who receive licenses for the use of patents for synthetic drugs must use a common designation for each drug selected by the foundation. Cinchophen has been selected as the designation for the substance introduced as atophan (also described in the U. S. Pharmacopoeia under "phenylcinchoninic acid"). In consideration of this action on the part of the Chemical Foundation and also because physicians found it difficult to use the pharmacopoeial name phenylcinchoninic acid, the Council on Pharmacy and Chemistry has recognized the contrasted term cinchophen as the name for the drug introduced as atophan (Jour. A. M. A., Aug. 9, 1919, p. 427).

Capell's Uroluetic Test.—A "Doctor" H. F. Matthews, representing the Capell Laboratory, Omaha, is demonstrating an asserted new test for syphilis—Capell's Uroluetic test. J. O. Cobb, M. D., Senior Surgeon in Charge U. S. Marine Hospital, Chicago, writes that in a demonstration of the test (which is to be applied to the urine of patients) "Doctor" Matthews was given the same specimen of urine in four different containers, and he read a different degree of reaction for each of them. Capell's Laboratory is apparently conducted by Dr. W. L. Capell. Some years ago, Dr. Capell was con-

nected with a concern known as "Acneine Pharmacal Company." In 1917, W. L. Capell was connected with Capell, Cameron Co., Inc., which was selling "Capell's Uroluetic Test," "Capell's Treatment for Syphilis" and other remedies. The treatment for syphilis (mercarodin) is sold by Capell's Laboratory. It also sells Acneine, which apparently is the same product that was sold in 1906 under the name "Sambu-Co." by the Holtman-Stringer Co. of Omaha. While the Capell Laboratory still sells proprietaries, it appears to be featuring the "Uroluetic Test" at the present time. The test would be important if it was reliable; unfortunately its scientific value to the sufferer is negligible, compared with its economic value to the exploiter. It is not so much a test for syphilis in the patient as of credulity in the doctor (Jour. A. M. A., Aug. 23, 1919, p. 626).

The Uses of Yeast.—Yeast is one of those remedies that have undergone alternating cycles of use and of disuse; just at present it appears again to be in its ascendency. Recently renewed attention has been called to its laxative qualities. The much debated question whether yeast can be used as a food, can be answered in the affirmative. However, in view of its laxative action, the amount of yeast which can be ingested is limited. Also, owing to its high nuclein content it is contraindicated in gout. As a source of water soluble growth promoting as well as antineuritic vitamin, yeast has become thoroughly established. However, as common foods contain this vitamin, there is little likelihood of its proving of therapeutic value, since it promotes growth only when stunting is due to lack of vitamins. Yeast has been used as an application in acne, for infected wounds and in leukorrhea. Recently the curative value of the oral administration of yeast in various cutaneous disorders has been reasserted (Jour. A. M. A., Aug. 23, 1919, p. 628).

The Council on Pharmacy and Chemistry.—The profession should recognize that the most important factor in the clearing up of the advertising pages of medical journals has been the Council on Pharmacy and Chemistry of the American Medical Association. The Council has been criticized both by the manufacturer and the profession, but it has gone on doing the work for which it was created. Sometimes the practitioner feels that his clinical experience justifies the use of a preparation which the Council has not found reoson to accept. While apparent clinical results may be misinterpreted, the carefully conducted examinations of the Council are likely to be definite and dependable. We are becoming more and more convinced of the unreliability of reports of clinical use by physicians. Practitioners should avail themselves of the Council's investigations by frequent reference to the reports of the Council. If they would keep on hand a copy of New and Nonofficial Remedies for ready reference and prescribe only of the new preparations those that have been accepted by the Council, they would aid materially in the establishment of a scientific and reliable therapeusis (Jour. Kansas Med. Soc., Aug. 1919, p. 193).

S. S. S.—The state of Louisiana has a law prohibiting the sale of venereal disease remedies, except on the written prescription of a licensed physician. In May of this year, the Bureau of Venereal Diseases of the Louisiana State Board of Health notified the druggists of Louisiana that the sale of "S. S. S." ("Swift's Syphilitic Specific" or "Swift's Sure Specific") would meet with the same law enforcement measures as were being waged against any venereal disease nostrum. The result of this notice was a letter sent to various drug stores of Louisiana by the sales manager of the Swift Specific Company declaring that "S. S. S." is not recommended or advertised as a venereal medicine. A few years ago, "S. S. S." was boldly heralded in newspaper advertisements as a "cure" for syphilis (Jour. A. M. A., Aug. 30, 1919, p. 707).

PROGRESS IN MEDICINE AND SURGERY

CLIMACTERIC HYPERTENSION: A STUDY OF HIGH BLOOD PRESSURE DURING AND FOLLOWING THE MENOPAUSE. By Arthur H. Hopkins, M. D. (American Journal of the Medical Sciences, June 1919.)

In this paper Hopkins is endeavoring to make a definite clinical entity of the climacteric type of hypertension, and evidently considers that all the cases of so-called "benign" hypertension fall into this class, and assumes that the male afflicted with the clinical picture of benign hypertension is distinct from this condition insofar that they more nearly approach the terminal sclerotic kidney following arteriosclerosis as described by Stengel.

The paper begins with a brief review of the history with some quotations from Allbutt and Stengel with whose classification he evidently largely agrees. He apparently disagrees to a certain extent with Meara, and assumes that some of the types described by Meara in his recent article probably should be placed in the renal group of hypertension. He emphasizes the fact that these climacteric cases usually occur after the menopause in the sixth decade of life, and that the higher figures usually prevail not only in the systolic but also in the diastolic pressure. The majority of his cases fell within the office practice, of the ambulant type, and he has noted a strikingly healthy appearance, frequently with obesity. The women he says are usually of the higher social class, are energetic, somewhat nervous in temperament, and good livers.

Fibrosis develops in the peripheral arteries usually toward the latter part of the sixth decade, and is evidenced by changes in the retinal arterioles, so

that an ophthalmologist sometimes first recognizes the condition. The chief symptoms that he has noted were chiefly gastric and nervous, constipation with fermentation, so-called "gastric neuroses", nervousness, pain, chiefly in the limbs, and headaches. Some cases also complained of weakness, vertigo and nose bleeding. He insists that these cases are in rather marked contrast as far as the history and course are concerned with the men afflicted with hypertension between the ages of 50 and 60.

He states that he finds that the cardiac embarrassment and pain in the limbs were in preponderance in the males; also that the sclerosis in the peripheral vessels was far more marked and developed considerably earlier in life, whereas in the climacteric type the retinal sclerosis occurred in only two groups, firstly in those occurring at the age of 60, and secondly in those who had a previous history of scarlet fever, pneumonia, or some other acute or chronic infection. He also considered the previous incidence of rheumatism, pneumonia, syphilis, lead, alcohol, and typhoid fever as predisposing causes of the arterial changes in men. His differentiation by means of the renal functional tests and the P. S. P. output, as well as by chemical examination of the urine, is not very convincing. He reports seven cases more or less in detail to show the contrast between his climacteric type of hypertension and the type described by Stengel as the renal sclerotic type following artriolar sclerosis or the arteriolar fibrosis of Gull and Sutton.

In discussing the etiology he places apparently, great significance on the function of the endocrine glands, assuming that by their correlation they form a physiological balance, which is preserved by proper distributions of harmony and antagonism between the functions of the various glands. If one is diseased or removed the balance is upset, and the organism of the individual may be affected by the abnormal action of one or more distant glands of the group.

He calls attention to the adrenal and the pituitary bodies and the thyroid and the ovaries. He believes that the ovarian secretion is correlated with the secretion of the other three, and that with the hypofunction of this gland at the time of the menopause we have a disturbance of balance of function with evidences of probable hyperactivity in the other three glands mentional.

He quotes Vincent, who has shown the cortical enlargement in the suprarenal body during breeding and pregnancy. He also mentions the influence of posterior lobe extract of the hypophysis on the blood pressure, and that the extract of the anterior lobe has a distinct influence on the sexual organs, and also that the gland enlarges during pregnancy. The enlargement of the thyroid gland during pregnancy is mentioned. He attributes the cause of this type of hypertension wholly due to the disturbance in the function of the endocrene glands, and finds no other clear cut etiological factor.

As far as the sequence in the course of the disease is concerned, he believes, like Allbutt in the production of a fibrosis in the vessels, occurring during the latter course of the disease, at about the age of sixty, and finally urges the importance of taking blood pressure estimations of all women at the menopause, as being of diagnostic and therapeutic benefit for the patient.

This interesting paper is going to be continued later on, with a discussion of prognosis and treatment.

OCCURRENCE OF NEW-GROWTHS IN THE ABDOMINAL WALL AFTER LAPAROTOMY

Danforth (Surgery, Gynecology and Obstetrics, Vol. XXIX No. 2) states that fibrous tumors of the abdominal wall are not at all uncommon, as a report in 1904 by Pfeiffer showed a collection of more than 400. Their etiology is not altogether clear. Pregnancy seems to be a definite predisposing factor. They occur in women in a ratio of 7 to 1. It is possible that the stretching of the abdominal wall incident to pregnancy, together with the possible tearing or rupture of some fibers in the aponeurosis of the rectus and oblique muscles may furnish the trauma necessary to the starting of a new-growth.

These tumors occur most frequently in the sheath of the rectus and upon the aponeurosis of the oblique muscles. They are usually irregularly round with rather sharply defined borders, and when they are grasped they are found not to be movable upon the underlying tissue. A very characteristic point is that when the abdominal wall is under tension they disappear, while when it is relaxed they become easily noticeable. They are ordinarily small but have been noted as large as the size of the foetal head. They must be distinguished from sarcoma, hernias of the muscle, lipomata, and from inflammatory growths in scars following laparotomies.

These tumors appear from a few months to five and one half years after operation.

These tumors should be excised immediately. The excision should include the removal of that portion of the aponeurosis which forms the base of the tumor. Excision of the growth should be followed by careful microscopical examination in order that the occasional occurrence of malignancy may not be overlooked.

E. M. JONES.

INGUINAL HERNIA. An Operative Method by Which Close to 100 per cent Cures Have Been Obtained. Franz Torek, M.D., (Annals of Surgery, Vol. LXX No. 1, July, 1919.) reports on an operative method by which close to 100 per cent cures have been obtained, giving a total of approximately 600 cases, out of which two recurred, i.e., one-third of one per cent.

He emphasizes—

1. Clean separation of the vas deferens and the

bloodvessels of the cord from each other as well as from the sac by the removal of all the connective tissue that binds them together, allowing the vas to come out at the bottom of the opening in the transversalis facia and the vessels to come out at the top of it, while the stump of the sac sinks back between the two. A couple of stitches uniting the muscles to Poupart's ligament keep the vas and vessels permanently separated at the site of the internal ring. The introduction of these sutures applies only to the oblique variety of inguinal hernia.

2. Below the vas suturing of Poupart's ligament to the internal obligue and transversus muscles, and often to the rectus muscle, is continued all the way down to the insertion of the pubis. This is of importance in order to avoid recurrence in the shape of direct hernia, as well as for the repair of one already existing.

3. The employment of non-absorbable suture material at those parts were there is tension, his preference being silver wire.

He says that within the abdomen the vas deferens and the bloodvessels of the cord are apart and separate from each other. At the internal inguinal ring they meet at an angle, the vessels approaching the ring from above downward, the vas from below upward (Figs. 1, 2 and 3). At the site where they meet, an open wedge, or infundibulum, exists through which intra-abdominal structures can force their way out, the protrusion being facilitated by this funnel-shaped arrangement. As a matter of fact, when an obligue hernia is formed, it always wedges its way through between the vas and the vessels. The arrangement of the structures at the internal inguinal ring is: Vessels above, vas below, sac between them.

The object of the above named "first point" separating vas and vessels and keeping them apart—is to deprive the peritoneum and the abdominal contents of the opportunity again to obtrude or force themselves between these two structures, as they could so conveniently do while the wedge-shaped arrangement of vas and vessels existed at the internal ring. This arrangement is abolished by establishing a firm, square buttress of abdominal wall between vas and vessels, the buttress consisting of internal oblique and transversalis muscle with its fascia on the one side sutured to Poupart's ligament on the other.

Regarding sutures he advocates use of non-absorbable material silk or silver ware for the first one or two lower sutures were the rectus is approximated to Poupart's ligament.

G. Earl.

TREATMENT OF SYPHILIS IN TUBERCULOUS PATIENTS: Jos. A. Elliott, M.D. (Amer. Jour. of Syphilis, vol. 3, April, 1919). The author speaks of the not uncommon occurrence of finding both a syphilitic and tuberculous infection in the same person. The literature being full of data as to the incidence of tuberculosis among syphilitics. The various investigators, however, worked on markedly different material, causing percentages to vary considerable. Tedeschi reports that 70 per cent of the cases of tuberculosis developing during a period of ten years in his prison service occurred on luetic soil. The other investigators' figures vary from 5 to 43 per cent. Bronfenbrenner attributes the frequency of tuberculosis among syphilitics to the syphilis as such or to the antisyphilitic treatment lowering the resistance of the patient so as to make him more susceptible to a new infection of tuberculosis or render him less resistent against the progress of the disease already contracted. He refers to the enthusiasm many clinicians showed, a few years ago, following a report that tuberculosis was greatly benefitted by mercurial injections. The author states this report was a little premature as it was shown that these patients who showed improvement had syphilis also and that results were only temporary.

According to Hartz (Jour. A. M. A., vol. 55, 1910) to the author and many other observers, mercury was shown to be detrimental to patients with tuberculosis. He says with the advent of Salvarsan, many optimistic results have been reported. The author's experience does not verify this. He gives many case reports of patients with a dual infection treated with arsphenamine alone and comes to following conclusions:

Mercury should be used with great caution in tuberculous patients.

The deleterious effect is not immediate but appears months later as pointed out by Hartz.

Arsphenamine is the drug of choice but should be given in small doses at long intervals as in his experience the ordinary dose accentuates active foci and is proven to cause a flare up in latent lesions.

C. D. Freeman.

EXTIRPATION OF THE LACRIMAL GLAND FOR RELIEF OF EPIPHORA: Christian R. Holmes, (Arch. of Ophth. Vol. XLVIII, No. 4, July) published in 1899 an article recommending extirpation of the larcimal gland in cases where accessive epiphora can not be checked by other means. Although the article aroused considerable interest at the time, the operation did not meet with general approval; in fact it soon became abandoned by most of its adherents. However, Holmes states that although his first operation was performed in 1890, he still sees some of his first cases and all have remained cured.

Why was the removal of the orbital gland abandoned? In the days of septic surgery not infrequently inflammation developed in the wound at times leading to orbital cellulitis with strangulation of the optic nerve and vessels resulting in loss of vision if not of the globe itself.

The removal of secondary lacrimal gland advocated by De Wecker and Terson, does not, in the opinion of the author seem logical for at least 90 per cent of the tears are secreted by the lacrimal gland proper.

Nevertheless, both the palpebral and lacrimal gland proper may be removed without discomfort to the eye for the conjunctival and Krause-Waldeyer mucous glands produce ample moisture for the eye ball.

Extirpation of the lacrimal gland as performed by the author. Through the unshaven brow an incision is made along the margin of the orbit cutting against the bone, starting near the center of the upper orbital arch and carried to a point about 3 mm below the outer canthus. The fascia or septum orbitale is cut through along its attachment to the orbital margin. Care should be exercised to differentiate between fat and gland, the latter appearing a pinkish yellow by electric light. The relation of the anterior edge of the gland to the orbital margin varies slightly; in some cases the gland presents one or two millimeters below, in most cases 2 to 3 millimeters upward and backward from the edge of the bony orbit. By means of a slender, blunt-pointed pair of scissors, broad fixation forceps, small knife and a pair of tenotomy hooks, the gland in its entirety can be removed with but little change in its shape, thereby assuring the operator that the extiration is complete. If desired the palpebral or secondary gland may also be removed by passing a blunt hook through the palpebral fissure and the conjuctiva over the seat of the gland pushed by the assistant up into the wound.

PAUL D. BERRISFORD.

THE TRANSPLANTATION OF THE RECTUS MUSCLE OR ITS SHEATH FOR THE CURE OF INGUINAL HERNIA WHEN THE CONJOINED TENDON IS OBLITERATED. THE TRANSPLANTATION OF THE SARTORIUS MUSCLE FOR THE CURE OF RECURRENT HERNIA WHEN POUPART'S LIGAMENT HAS BEEN DESTROYED: Joseph Colt Bloodgood, M. D., (Annals of Surgery, Vol. LXX. No. 1, July, 1919.) says that the chief cause of recurrence in the lower angle of the wound was due to the fact that, whether the hernia was direct or indirect—the conjoined tendon was either weak or obliterated, and that the ordinary suture or closure of the defect in the abdominal wall was not sufficiently strong to protect from recurrence in the lower angle.

During the recent war he had an opportunity to examine in Maryland a large number of selected service men who were placed in Group B because of inguinal hernia. The conjoined tendon was obliterated in 5 per cent. As the majority of these selective service men volunteered to be cured of their defect in order to render service, he had an opportunity in a few months to operate on more than one hundred cases.

In this type of hernia, when one invaginates the scrotum and introduces the finger into the external ring, little or no resistance is met and the finger passes over the pubic bone, and, as a rule, can be pushed into the space of Retzius behind the rectus muscle. When this anatomical defect is present on both sides the two fingers meet behind the recti.

The weakness in the abdominal wall is therefore bounded laterally by Poupart's ligament and the rectus muscle, and below by the pubic bone. The firm and perfect closure of this opening is hampered by the presence of the cord.

The author says, "When I first transplanted the rectus in order to suture it to Poupart's ligament and thus strengthen the defect in the lower angle of the wound due to the obliteration of the conjoined tendon, I also transplanted the cord and excised the veins as in the Halsted operation (Fig. 2). Since my publication in 1899 we discontinued to transplant the cord and rarely excised the veins, and when this rarer type of inguinal hernia presented itself, we continued the method of transplantation of the rectus, usually with Halsted's modification of transplanting its sheath (Fig. 3), but we did not transplant the cord. As far as I am able to ascertain, in the group in which I had transplanted the cord (Fig. 2) there has been only one recurrence, but since the change in technic of leaving the cord undisturbed in the lower angle of the wound I know of at least four recurrences in operations which I performed myself, and it seems strange that this made no impression."

In conclusion he makes a plea for change in the technic of the usual procedure, when there is every evidence that the chief weakness is in the lower angle of the inguinal canal due to the obliteration of the conjoined tendon, and not in the usual position, in the upper angle where the cord is situated, and through which the testicle descended.

G. EARL.

THE METHOD OF OBTAINING CEREBROSPINAL FLUID BY PUNCTURE OF THE CISTERNA MAGNA. (CISTERN PUNCTURE): Wegeforth, Ayer and Essick, (The American Journal of the Medical Sciences, Vol. CLVII, No. 6.) call attention to the two main routes employed in securing cerebro-spinal fluids from animals. The first is the lumbar, and the other the space between the occipital bone and the first cervical vertebra. In 1913, Dixon and Halliburton secured spinal fluid from dogs by a direct puncture through the occipito-atlantoid ligament. In 1186 punctures of this ligament on cats, injury to the medulla occurred only in 84 per cent. This percentage was further reduced after experience and in the last 527 punctures only three similar injuries occurred. This same route has been successfully used on patients. For introducing the needle, a point is selected in the midline just above the spine of the axis. The needle should be passed inward and upward in a direction continuous with a line passing through the glabella and external auditory meatus. The average distance necessary to insert the needle is about 4 cm. However, one should rely in a large measure on the tactile impression produced when the point of the needle overcomes the resistance offered

by the ligament and dura and passes into the cavity of the cistern. As the anterior wall of the cisterna cerebello-medullaries is formed by the lower part of the medulla and the upper part of the posterior surface of the cervical cord, great care must be exercised in introducing the needle so as not to injure these important structures.

One valuable use for this method is in cases of cerebro-spinal meningitis complicated by spinal-subarachnoid block. The authors report a case where they successfully used this method in this complication. The patient improved decidedly but subsequently died and postmortem revealed complete blockage of the canal at the level of the sixth dorsal vertebra.

It has further been shown that stained solutions introduced by the lumbar route only, do not extend beyond the base of the brain, while when both routes are employed, both the spinal cord and even the convolutions of the brain cortex are reached. In cases of purulent meningitis, punctures have been performed in both the lumbar and occipital region, the needles kept in situ and through and through irrigation with Ringer's solution carried on until the solution from the needle in the lumbar region became free from pus. This method of injecting serum through both avenues is of particular value in cerebro-spinal meningitis in children, in whom there is much greater tendency for blockage of the cerebro-spinal fluid spaces than in adults.

In postmortem work, cerebro-spinal fluid can be more readily obtained by way of the occipital route than by ordinary lumbar puncture.

E. M. HAMMES.

THE INTIMATE RELATION BETWEEN THE EAR AND THE EYE AS SHOWN BY THE BARANY TESTS: H. Maxwell Langdon and Isaac H. Jones (Archives of Ophthalmology Vol. XLVII, No. 4, July 1918) call attention to the ophthalmologist to the governing power of the ear over eye movements and equilibrium. It is not generally recognized that the ocular mechanism is dependent upon the ear stimili for precision of movement. Steadiness of central fixation is made possible only by normally acting ears. Tonic impluses from the right ear continually tend to draw both eyes to the left and tonic impluses from the left ear continually tend to draw both eyes to the right. This is definitely proven in that a sudden loss of the function of the right ear invariably results in a rotation of the eyes to the right because the tonic impluses tending to draw the eyes to the left are impaired and there is a resulting spontaneous nystagmus to the left.

Aside from the production of nystagmus in this experimental way the ear in many animals has a decided influence on occular rotations. Barthels makes the statement that rabbits have no trace of voluntary fixation of the eyes but that ocular movements depends entirely upon stimuli from the auditory apparatus and that section of the acoustic nerves in rabbits produce complete loss of eye movements.

It is now definitely known that the ear consists of two organs of distinct and separate functions, the cochlea which is the organ of hearing and the vestibular labyrinth which is the sense organ of balance, the equilibratory portion of the ear consists of two tiny sacs known as the utricle and saccule of three semi-circular canals; the utricle take cognizance of movements in a linear direction anterior-posteriorly and the saccule of movements in a lateral direction; the semi-circular canals are so constructed as to detect rotary movements of the body in all conceivable planes.

The horizontal canal detects movement in a horizontal plane, the two vertical canals the superior and posterior always work together and detect movement in the sagittal, frontal or intermediary vertical planes.

If stimulation of the semi-circular canals causes the eyes to move it is evident that there must be nerve paths between the ear and the eye muscles. A study of over 600 clinical cases including a considerable number of operations and autopsis in the department of neuro-otology at the university of Pennsylvania has brought out certain facts in regard to these pathways some of them definite others needing further analysis. Our present belief in fact is as follows.

1. The fibres from the horizontal semi-circular canals pass through the VIII nerve enter the brain stem at the junction of the medulla oblongata and pons and continue directly to Deiters nucleus and there divide into two paths.

A. The vestibulo ocular tract concerned in the production of the nystagmus. These fibres go from Deiters nucleus to the posterior longitudinal bundle, through which they pass to the various eye muscle nuclei from which through the III and VI nerve they are distributed to the eye-muscles themselves.

B. The vestibulo-cerebral tracts responsible for the vertigo. From Deiters nucleus this path enters the cerebellum through the inferior cerebellar peduncles to the three vestibular cerebellar nuclei of the same side, from which it proceeds upwards through the superior cerebellar peduncle and continues to the cerebral cortex from both sides, but more particularly the opposite side, through the crura cerebri. The cortical areas which receives these fibres are postulated by Mills to be in the posterior portion of the second temporal convolutions adjacent to the cortical areas for hearing.

2. The fibres from the vertical semi-circular canals have a very different course: after passing through the VIII nerve they immediately ascend into the pons and at a point above the middle of the pons they have a division into two pathways similar to the division of the horizontal canal fibres at Deiter nucleus.

A. The vestibulo-ocular tract the fibres entering

the posterior longitudinal bundle to be distributed to the eye muscle and finally to the eye muscle themselves.

B. The vestibulo-cerebellar tract reaches the cerebellum through the middle cerebellar peduncle entering the cerebellar nuclei of the same side; from this point the pathway is identical to that of the fibres from the horizontal canal through the superior cerebellar peduncle to the cerebral cortex of both sides.

The internal ear and these intracranial pathways constitute our conception of the vestibular apparatus and a knowledge of this is of use to the ophthalmologist in the study of occular palsy and spontaneous nystagmus.

The ophthalmologist is primarily concerned with the so-called nystagmus tract and has only a collateral interest in the pathways producing vertigo.

In cases of muscle paresis it has occurred to us that ear stimulation by means of electricity might be used therapeutically as the alternate pull and relaxation of the changing current would possibly succeed in stimulating to action what nerve-fibres there were remaining intact and shorten the time of recovery. We have had no opportunity of trying this so it is in the realm of theory, but we intend to work along this line in the near future.

GEORGE C. DITTMAN.

BOOK REVIEWS

BOOKS RECEIVED FOR REVIEW

Collected Papers of Mayo Clinic, Vol. 10, 1918. W. B. Saunders Co.

Medical Clinics of North America, Vol. 2, No. 6. W. B. Saunders Co.

Textbook of Materia Medica for Nurses. Muirhead. C. V. Mosby Co., $1.50.

Psychiatric-Neurologic Examination Methods. Hoisholt. C. V. Mosby Co., $2.00.

Cerebrospinal Fluid. Levinson. C. V. Mosby Co., $3.00.

Milk. Heineman. W. B. Saunders Co., $6.00.

Don Quixote of Psychiatry. Historico-Medical Press., $2.00.

Surgical Clinics of Chicago, Vol. 3, No. 3. W. B. Saunders Co.

Plastic Surgery. Davis. P. Blakiston's Son & Co., $10.00.

TEXTBOOK OF UROLOGY IN MEN, WOMEN AND CHILDREN. By Victor Cox Pedersen, A.M., M. D. F. A. C. S. Lea and Febiger, Philadelphia and New York. 1919. $7.00.

In the first words of his preface Doctor Pedersen admits that there is "nothing new under the sun." If such is the case one must at least concede that the author has omitted nothing of the old for the work is most complete. There has been omitted the usual chapters on Syphilis at the end of the work, for which innovation the author and publisher are to be commended. Urology is in a field broad enough and distinctive enough without that of syphilology.

The chapters on cystoscopy and uretereal catherization are the most complete and definite that I have seen in any text book, constituting almost a reference work for the student and an invaluable text for the beginner in this field.

The same might be said of the chapters on General Principiles of Treatment for the author has included a brief description of electro-therapeutic and mechano-therapeutic measure available for the Urologist.

On account of its completeness, its classifications, and especially the definite exposition as to technique in simple cases as well as the complicated it makes a very good text book for the student and one to which every student might well have access,—to his profit.

E. C. GAGER.

COLLECTED PAPERS OF THE MAYO CLINIC Rochester, Minn. Edited by Mrs. M. H. Mellish. Vol. 10, 1918. Philadelphia and London. W. B. Saunders Company 1919.

The 1919 volume of collected papers from the Mayo Clinic is much like its predecessors. The papers are complete and well edited. Two articles by Taylor on infant feeding and relation of tonsil infection will be of interest to the general practitioner, as will also be Rosenow's report on 200 cases of lobar pneumonia. The articles on surgical subjects, as handled by W. J. and C. H. Mayo, Judd and assistants, are smooth, enlightening and of great value. Paper and print is good, index of subjects, contributors and references complete.

H. J. O'BRIEN.

ESSENTIALS OF SURGERY. By Archibald L. McDonald, M. D. J. B. Lippincott Company, Philadelphia and New York. Price $2.00.

To quote the author this book was written "in the belief that the nurse can more intelligently assist in the care of her patient if she has a reasonable conception of the conditions present and of the indications present and of the indications to be met in treatments."

The first three chapters are devoted to the study of bacteria and their connections with wounds. Surgical diseases are discussed concisely with respect to their cause, result, treatment and complications. Special regions of the body are given individual chapters. Although the author assumes the nurse to have had an elementary knowledge of Anatomy and Physiology, enough is given to make the surgical conditions clear to the graduate nurse.

A complete Glossary adds materially to the value of the book.

MISS AGNES TEISBERG, R. N.